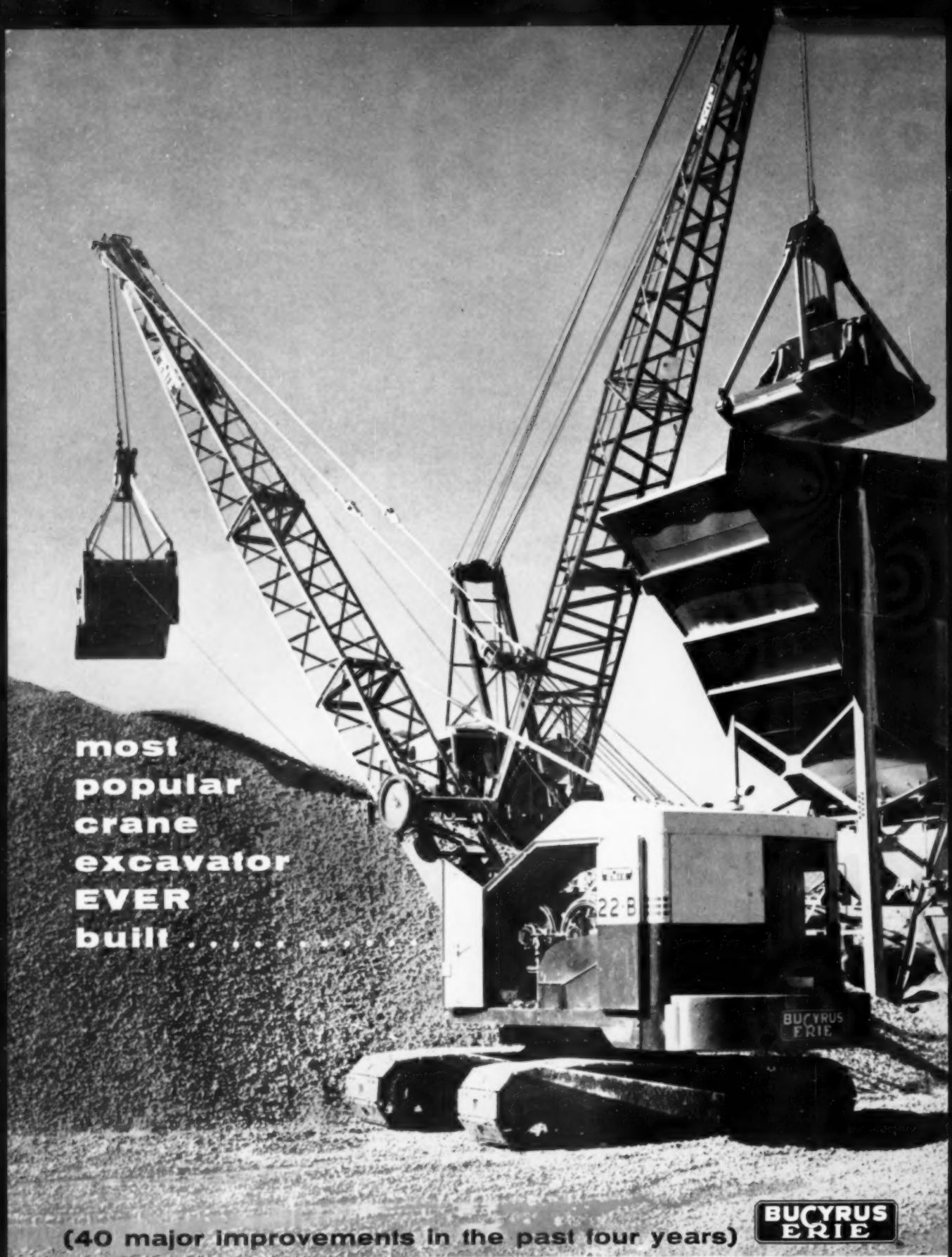
Excavating Engineer

founded 1905

APRIL
1961

First American-built tower crane constructs 13-story apartment building in suburban Los Angeles. See story on page 36.



(40 major improvements in the past four years)

BUCYRUS ERIE

4E61

BUCYRUS-ERIE COMPANY, South Milwaukee, Wisconsin

Excavating Engineer

founded 1905

P. O. Box 56
South Milwaukee, Wisconsin

F. T. HOUSE
Publisher

H. A. BURKHARDT
Manager

W. C. VAN DYKE
Sales Manager

W. E. WILLIAMS
Editor

F. C. GROTJAN
Assistant Editor

E. W. ARNDT
Art Editor

H. LINDQUIST
F. W. MOVROYDIS
Staff Photographers

Copyright 1961 by Bucyrus-Erie Company. Published monthly at South Milwaukee, Wisconsin, U.S.A. Special subscription: Upon written request on company letterhead this publication will be sent free of charge to companies, executives and supervisors whose business involves excavating, earthmoving, and the handling of bulk materials in the heavy engineering and construction industries. Occupation of subscriber must be given for all subscriptions, paid or special. Right is reserved to refuse foreign subscriptions. Indexed by Engineering Index, Inc. Volumes available on microfilm.

BPA

Circulation is audited by Business Publications Audit of Circulation, Inc.

CONTENTS

Volume 55 No. 4 **April 1961**

Long-Range Quarry Shovel Teams With Big Stripper to Uncover Two-Seam Coal 4

Peabody Coal Co. improves stacking of overburden at its River Queen mine by using a specially-designed parting removal shovel to assist the 55-yd. main stripping shovel.

Minneapolis Lock Stays On Schedule Despite Triple Threat 12

Rapid water seepage, tough digging and cramped quarters plague contractor but, like Old Man River, the job keeps rolling along.

From Mule-Drawn Hand Scoop to Modern Contracting Firm —by Syd Jamieson 22

Clarence Powley claims he owes his success to "breaks in the game." Whatever the reason, this company has come a long way since its small start in 1928.

Not in the Contract 28

Oregon's Fantastic Coast Road—by Floyd Suter Bixby 32

Rugged, scenic terrain requires fills 100 to 190 feet high at center line; huge drainage pipe installations handle heavy run-off from timbered slopes.

Tower Crane Up—Building Costs Down—by Ray Day 36

American-built crane drops labor 30% on first job; saves enough construction time to justify its purchase.

News from the Field 42

Coal Show Set for May 15-18 42
Letter to the Editor 42
Army Testing New IH Earthmover-Carrier .. 42
Contractor Gets Sleek Copter 44

New Trade Literature 50

Equipment You Ought to Know About 52

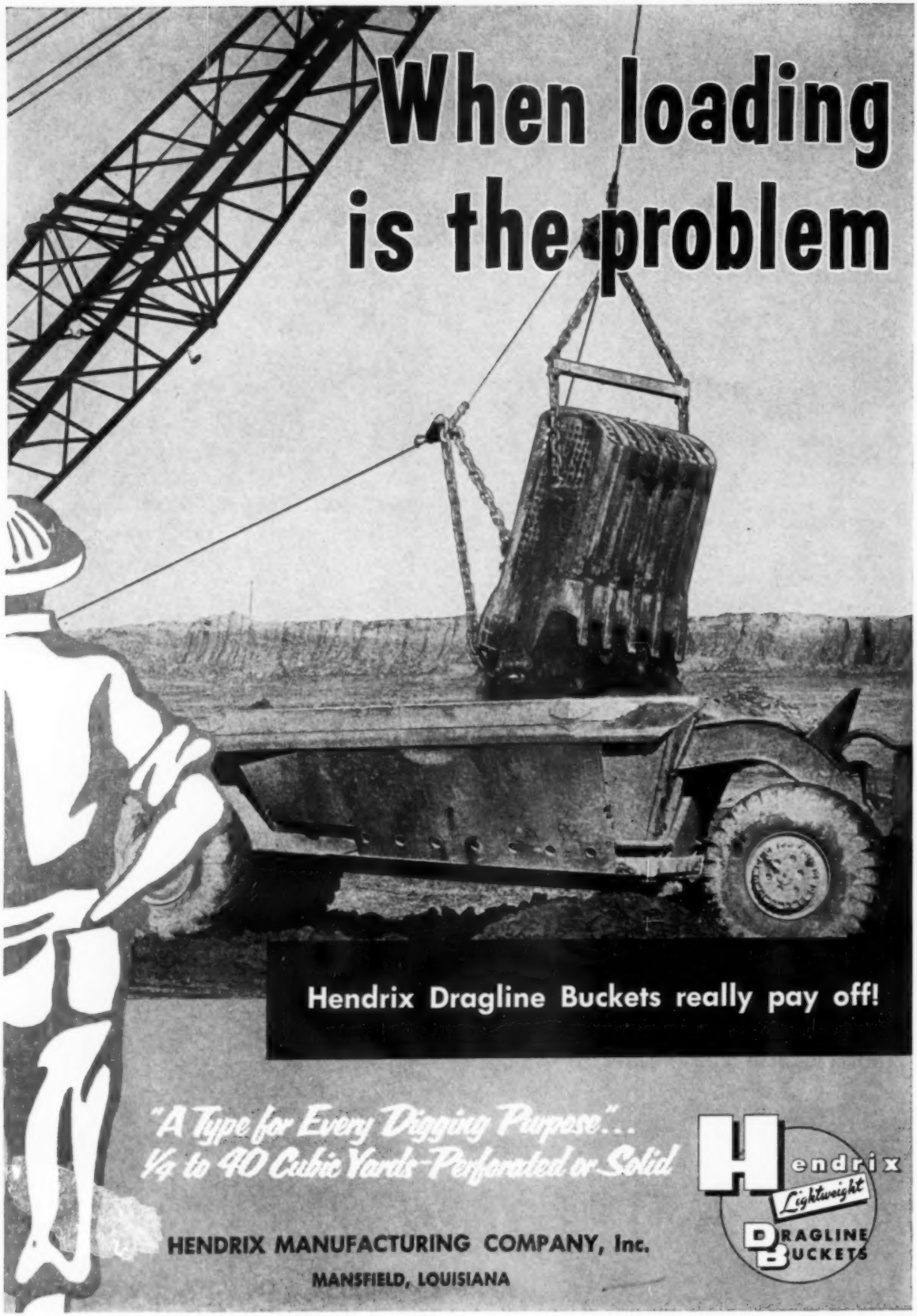
Advertiser's Index 60

Classified Ads 62

Regular subscription $3.50 a year (payable in advance)

Single copy price 35 cents

Canada and Foreign, subject to publication policy, $5.00 per year


When loading is the problem
Hendrix Dragline Buckets really pay off!
"A Type for Every Digging Purpose"...
½ to 40 Cubic Yards—Perforated or Solid
HENDRIX MANUFACTURING COMPANY, Inc.
MANSFIELD, LOUISIANA
Hendrix
Lightweight
DRAGLINE BUCKETS

NEW CONCEPT
in wire rope design

7-FLEX®

PATENT APPLIED FOR

Premium Whyte Strand IWRC

There's no other wire rope like it! Macwhyte combines all desirable wire rope characteristics in a single ALL-PURPOSE rope!

We think you'll be as excited as we are about 7-FLEX! This is the kind of rope you've been hoping for. It's as flexible as an 8-strand rope—as rugged as 6 x 19—and resists fatigue like 6 x 37.

7-FLEX has 16⅔% more wearing surface than 6 strand rope. There is less unit pressure between rope and sheaves, so less rope and sheave wear. There is more sheave contact, less rope-creep. Result — longer rope life — less down time — lower operating costs!

The all-new 7-FLEX is a PREmium high-quality, high-strength PREformed and internally lubricated Macwhyte Rope.

You'll want to install this rope on equipment applications like these:

- Crowd and hoist rope on scraper wagons
- Holding and closing lines on clamshells
- Shovel and drag line hoist ropes
- Digging lines on small excavators, trench hoes, etc.
- Boom hoist lines on excavating equipment
- Hoist and swing lines on dredges and derricks

Ask any Macwhyte distributor or write for bulletin 60100-R.

241A

THE RIGHT MACWHYTE WIRE ROPE

INDUSTRIAL • AIRCRAFT • MINING • LOGGING • OILFIELD • ELEVATOR • MARINE • CONSTRUCTION • BUILDING

MADE IN U.S.A.

MACWHYTE Wire Rope COMPANY

2900 Fourteenth Avenue, Kenosha, Wisconsin, U.S.A.

Wire Rope Manufacturing Specialists Since 1896

Electric shovel strips limestone divider between upper and lower coal seams. A 100-ft. boom and 54-ft. dipper handle allow a maximum dumping height of 75 feet. Maximum dumping radius is about 93 feet.

Long-Range Quarry Shovel Teams With Big Stripper to Uncover Two-Seam Coal

Peabody Coal Co. improves stacking of overburden at its River Queen mine by using a specially-designed parting removal shovel to assist the 55-yd. main stripping shovel.

PEABODY Coal Company's River Queen mine in west central Kentucky recently placed in operation the world's longest range stripping shovel mounted on two crawlers.

The machine is a Bucyrus-Erie 270-B, the first of a new series of electric excavators. The quarry-and-mine type shovel is used to strip a limerock divider which occurs between two coal seams. This parting is approximately 8 to 11 feet thick.

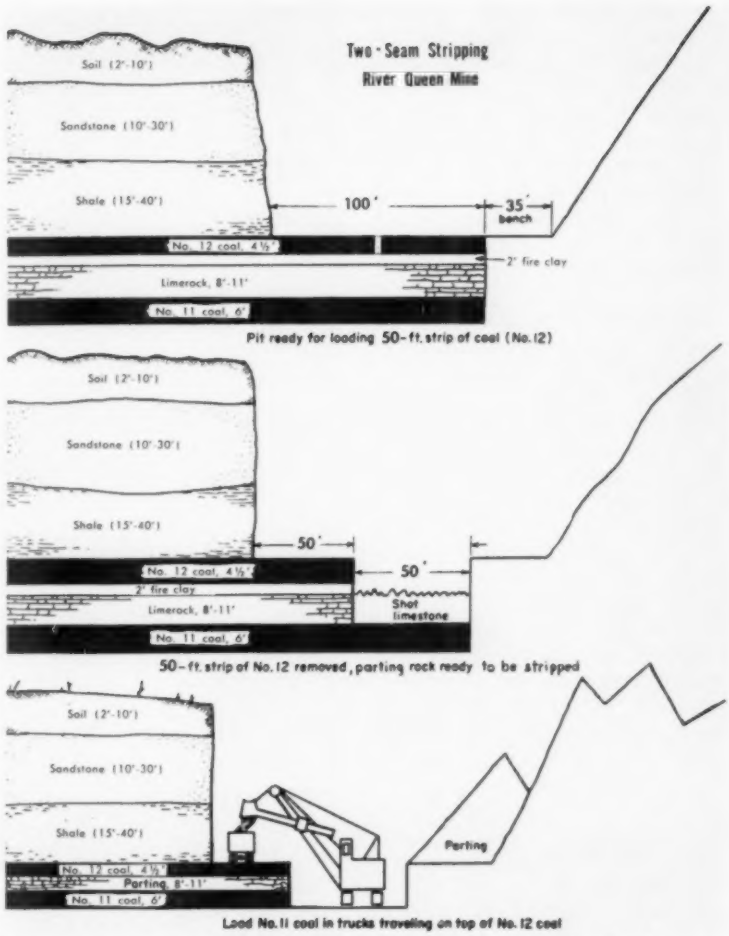
Peabody bought the specially-designed machine to get the long range necessary to stack the divider against the main spoil pile. The machine has a 100-ft. long shovel boom and a 54-ft. effective length for the dipper handle. It is mounted on an extra-wide base for good stability. Each of its two crawlers is 32 feet 4 inches long. Each crawler is 6 feet high and the treads are 6 feet wide. Overall width of the crawler base is 24½ feet. The operator's cab on the machine projects from the roof like a conning tower. Its elevated position gives the shovel-runner a better, closer view of the stacking.

If a shorter boom length was permissible, the 270-B could carry a dipper as large as 18 cubic yards. However, a smaller capacity dipper was chosen here to obtain longer range. It holds 8 yards.

The River Queen mine has the distinction of being one of the largest open-pit producers of coal in the United States. Last year it shipped 2¼ million tons of commercial quality coal. This type of coal is used mainly by electric utilities for steam generation of power. Peabody's customers range all the way from upper Ohio river cities to as far west and north as Minneapolis on the Mississippi river.

The mine, located near Central City in Muhlenberg county, is one of five Peabody mines in the area. The others are the White City, Vogue, Ken and Pond River mines. The River Queen mine, which was opened up in November 1957, has enough coal reserves to provide 30 years of stripping at a rate of about two million tons per year. Production comes from a four-mile long pit where overburden ranges from 5-ft. minimum to a maximum of about 130 feet. It is a two-seam operation where overlaying seams of coal are both stripped in close sequence by modern excavating equipment.

A typical cross-section of the overburden and coal formations at the mine shows the following composition. On top is a 2 to 10-ft. soil mantle followed by a sandrock formation ranging from as little as 10 feet to 30



Pit setup for mining overlaying seams provides for 1650-B shovel to uncover 100 feet of No. 12 coal, of which Marion coal loader takes out 50 feet; 270-B shovel takes out the limerock parting; and last, a Marion loader takes out the No. 11 seam.

When it is equipped with an 18-yd. dipper, the 270-B is the biggest shovel mounted on two crawlers. Each crawler is 32 feet 4 inches long and 6 feet high. Treads are 6 feet wide.

or 40 feet, and varying in hardness. The sandrock is a fissured yellow material which is interspersed occasionally with very hard layers of white sandstone. Under the sandrock is shale, ranging 15 to 40 feet thick.

Next comes the upper layer of coal, which is the 4½-ft. thick Kentucky No. 12. Under this seam is the limerock divider, and finally below is the 6-ft. thick seam of Kentucky No. 11.

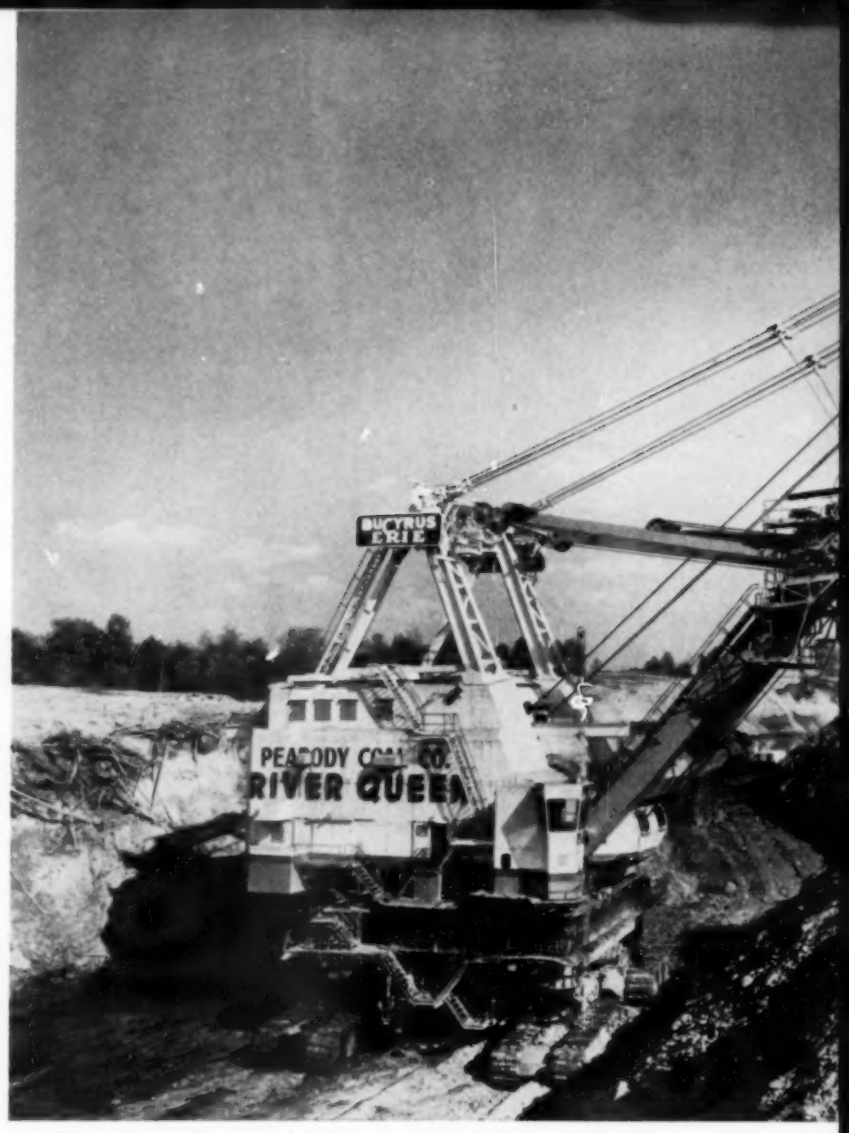
The divider between the two seams varies to some extent, but it averages about 11 feet thick. Roughly, 8 feet of the lower portion of the divider material is hard limerock; the top three feet are fire clay or dense shale.

Key to high tonnage at the mine is the 55-yd. *River Queen*, a Bucyrus-Erie model 1650-B stripping shovel.

A good indication of the shovel's capacity is the fact that it is capable of piling up 100,000 tons of overburden during a 24-hour period, working at the rate of one digging-dumping cycle per minute.

Working specifications indicate the enormous range of the shovel. Its 86-ft. dipper stick, for example, enables the *River Queen* to dump overburden as far away as 300 feet from its digging point. Maximum dumping reach from the outside edge of the crawlers is 122 feet 9 inches. Dumping height is 106 feet, dumping radius is 145½ feet and cutting radius is 158 feet. The *River Queen's* weight, too, is proportionately high. Working weight is 2,424 tons, or the equivalent of a U. S. Navy destroyer.

Stripping currently follows this procedure: The 1650-B main stripping shovel works on the top surface of the No. 12 coal. This machine strips overburden only down to the upper seam, and spoils it to the side. In doing so, it must place the spoil far enough away to leave room for the limestone divider which will be removed later.



The 55-yd. *River Queen* travels on top the upper coal seam as it strips overburden to create a 100-ft. wide pit. It dumps the material 300 feet from the digging point.

Pit Setup

In exposing the No. 12 upper seam, the 1650-B creates a pit 95 to 105 feet wide.

The exposed top seam is recovered with a Marion 4161 9-cu. yd. loading shovel that is stationed permanently on the No. 12 seam. With the No. 12 removed, the next job is to take out the divider. This is done with the 270-B shovel. Loading the exposed 6-ft. thick No. 11 seam is accomplished by another 4161 Marion that is situated permanently on top of that seam also.

Prior to arrival of the 270-B long-range shovel, the divider was handled by a long-boomed walking dragline working on top the limerock. The Page 634 electric dragline carried a 12-yd. Esco bucket on a 165-ft. boom. The 270-B makes a more efficient arrangement in the narrow confines of the pit.

The Page walking dragline now is used as a utility machine. At times, the 1650-B works banks as high as 130 feet. Because the shovel finds it difficult to spoil this large amount of overburden, a pullback machine must be used on top the spoil pile to re-handle some of the excess volume. The Page walker often draws this assignment. It also opens up crop pits, and it strips mucky material out of swamp areas.

According to Mine Superintendent Frank (Stub) Gilbert, the 1650-B moves about 20,000 yards per shift in good digging. The 270-B, to keep up the pace, must strip about 3,000 yards of divider material per shift.

Electrical system of the 270-B features a variable voltage static control employing magnetic amplifiers with no moving parts. At the operator's position are master controllers which control the output of the magnetic amplifiers. These magnetic amplifiers vary the intensity and direction of the exciting current which establishes the voltage of the main generators. Consequently, these amplifiers also change the speed and direction of rotation of the driving motors.

Cat D7 dozer shoves big rock against bank from which it tumbled down. Pit cleanup is left to auxiliary machines so the 1650-B can concentrate on moving a maximum of material.

The amplifier operates with no rotating parts or delicate electronic tubes. It provides quick, smooth response and flexible machine operation.

The machine is equipped with a motor generator set composed of an AC motor that drives generators to furnish DC power for the hoist, swing and crowd motors. The MG set is located at the rear of the revolving frame. There is a single 375-hp hoist motor; a 62½-hp crowd motor; and two 94-hp swing motors.

Drilling of the highwall is handled entirely by a single Bucyrus-Erie 50-R vertical rotary dry-type drill. Equipped with a Hughes type OSCJ1 Tri-cone bit, the electric-powered unit bores 10⅝-in. diameter holes.

When the overburden is thick and large tonnages must be broken, economic advantages are offered by the big-crawler-mounted rotary machines, which are capable of drilling up to 12-in. diameter holes. The large diameter makes it possible to concentrate explosives in the hard layers and to use low density explosives such as the ammonium nitrate-and-oil mixes. The extra hole capacity also makes it possible to break a larger volume of overburden with fewer blast holes.

Nitrate Admixture

Drilling is keyed to breaking up the overburden only as far as needed for efficient handling by the big 55-yd. dipper of the *River Queen*. Holes are drilled to an average depth of about 60 feet. They are loaded with a mixture of ammonium nitrate and fuel oil. Currently in use at the mine is Monsanto Lion brand ammonium nitrate, which is soaked with fuel oil at a proportion of one gallon to 100 pounds of pellets. Powder factor is generally about one pound of explosive to 3 or 4 yards of rock.

Primer used in the hole is a high-speed explosive of Olin Mathieson Chemical Corp., Sodium Amitol. Twenty holes are shot off at a time, detonated with caps and Primacord. Generally when multiple rows are shot, a delay is placed in every second row.

Hole spacing varies with the depth of the overburden. Up to 60-ft. depth, the hole spacing is on 30-ft. centers. When the overburden goes above 60 feet, the spacing is tightened up to 20-ft. centers.

The 50-R drills approximately 800 to 1,000 feet of hole per shift. Hughes Tri-cone bits give approximately 15,-

Elevated cab on this Marion 4161 gives the operator a good view as he loads a 50-ton Euclid bottom-dump truck with the 9-yd. dipper. Haulers always travel on top the No. 12 upper seam.

000 to 20,000 feet of hole before they are rebuilt locally.

The divider material is prepared for digging by an electric-powered tractor drill rig especially designed for that purpose. It consists of four drifter-type drills mounted on a crawler base and arranged for vertical drilling.

Drilling procedure on the limerock calls for the use of Olin's Mine Gel in 1½ x 8-in. sticks. One stick is used for each foot of rock to be blasted. Caps are placed in each hole and firing of each hole is delayed. When eight rows are drilled, delays are used on four of them.

The coal seams are not blasted. A Caterpillar D9 dozer with a No. 10 hydraulic ripper blade plows furrows through the hard packed coal, loosening it so that the 9-yd. shovel dippers can bite into it.

River Queen's haulage fleet includes six 50-ton bottom-dump Euclids, one 50-ton International and one 80-ton LeTourneau-Westinghouse semi-trailer. The Euclids are model 29TDT's with straight transmission. These trucks always travel on top of the No. 12 coal regardless of which seam is being loaded.

After leaving the coal, trucks travel on 60-ft. wide roads which are regularly patrolled with a motor grader and sprinkled during dry weather.

Hauling distance from the pit to the tipple varies from ¼ mile up to a maximum of 4 miles. Working in the

Continued on page 10

Electric-powered rotary rig drills the highwall ahead of the *River Queen* stripper (whose boom appears in left background).

Frank (Stub) Gilbert is superintendent of the River Queen mine, which shipped 2¼ million tons in 1960.

Small diameter 1¾-in. blast holes are drilled in hard limestone divider by crawler tractor drill carrying four drifters.

Overburden in places is a mighty rock bank standing up to 130 feet high. Material is mostly sandrock and shale.

pit are a Caterpillar No. 12 roadgrader, a D9 bulldozer, 2 D8's, two D6's, two D7's and a rubber-tired D6. Peabody maintains an excellent haulage road on the outside perimeter of the pit. Built on a gravel base, the road has been blacktopped and its appearance is as smooth as nearby Kentucky state route 181.

At the tipple, the trucks hardly stop rolling to dump their loads. They roll onto a ramp, the bottom doors of the trailer drop, and the coal falls into a 200-ton underground hopper. A belt conveyor feeds the ROM coal to a breaker inside the plant.

and 1-in. sizes are produced. However, these sizes cannot be produced simultaneously.

Coal from the preparation plant can be loaded directly into cars on the loading tracks. Or if blending is required, the coal may be sent to a silo where the No. 11 and No. 12, which analyze 12,500 and 11,500 BTU respectively, are combined.

There are approximately 130 employees at the mine. Personnel list include Frank Gilbert, superintendent; Ben Topmiller, assistant superintendent; Harry Carey, electrical supervisor; Irwin Oberg, dayshift pit fore-

Peabody has its own railroad to transport coal from its strip pits to the company's barge-loading facilities on the Green River. The river dock will accommodate 16 barges along its 1,000-ft. length. Loading is done at the rate of 1,000 tons per hour.

Brilliantly painted green and yellow, 15 railroad hopper cars travel 6½ miles over a private track behind

Peabody ships coal by barge via the Inland Waterway to its customers. Fully automated loading dock on the Green River loads barges at rate of 20 tons per minute.

The River Queen preparation plant was designed and built by McNally-Pittsburg. Coal is crushed, washed, separated, graded and chemically treated by fully automatic equipment operating at roaring speed. The plant is capable of running 1,000 tons per hour. The equipment includes a Bradford 10 x 20-ft. rotary breaker to produce 4 x 0 coal, three Allis-Chalmers vibrating, dewatering and classifying screens, a settling tank, and a 4,000-ton storage and blending silo. Cleaning unit at the plant is a 750-ton Pittsburg Giant Washer.

Generally all output is run at minus 2-in. size, although occasionally, 1½

man; George Jones, second shift pit foreman; Bud Cordon, tipple foreman; X. R. Lee, second shift tipple foreman; Floyd Murphy, master mechanic; L. H. Brown, office manager; Hugh Lovell, supply clerk; and Ray Brown, billing clerk.

Offices and maintenance shop are housed in a large, modern 100 x 200-ft. steel and concrete block building which provides the ultimate in design efficiency. There are seven welders in a shop working on maintenance of hauling units, tractor equipment and excavators. A separate maintenance force of five mechanics is set up to serve the tipple.

Vital

DAINTILY uprooting large trees like toothpicks, the *River Queen* chews 80-ton bites out of the Kentucky landscape. The shovel stands 14 stories high.

It is so heavy (2,424 tons) that it cannot stand on ordinary soft ground without bogging down. The coal seam itself serves as a road bed for the shovel. When it is necessary to move the machine off the coal, a roadway of 12-in. timber mats is built.

The model 1650-B shovel, over 140 feet high, has a 145-ft. boom and an 86-ft. dipper handle. This enables it to dump rock and earth overburden nearly 300 feet away from the digging point and to stack it more than 100 feet high. At each pass of its mammoth dipper, the *River Queen* excavates enough material to fill a room 14 x 12 x 9 feet.

Despite its huge size, one operator controls the entire digging operation of the machine with two hand levers and two foot pedals. The operator's glass-enclosed cab, perched 30 feet above the ground

Preparation plant of the River Queen mine is located on state route 181 southwest of Central City. The modern 1,000-tph plant was designed and built by McNally-Pittsburg.

a diesel locomotive. Each car carries 100 tons of coal.

The barge-loading operation is carried on for 14½ hours each day. Two 15-car trains shuttle back and forth over the track.

While one train is being loaded at the pit, the other is either en route or unloading at the dock. The running time of the train is just about as precise as a first-class passenger train of a major railroad.

It takes 18 minutes to make the run from the mine to dock. Another 42 minutes are consumed in unloading the 15 cars. Then another 18 minutes back to the mine. So, the round-trip takes about an hour and 26 minutes.

The bin, into which the train dumps the coal will handle the contents of slightly less than six cars of coal holding 100 tons each. From the bin, the coal drops onto an endless belt that dumps 20 tons of coal a minute into a barge. The belt runs continuously while each car is being emptied and for about 30 minutes after the train has gone.

A trainload of coal will practically fill one of the larger coal barges. During the 14½-hour operating schedule, seven to nine barges are loaded. While the mine works on a three-shift basis, only two labor shifts operate the train; consequently, a stockpile of coal is built up at the tipple. During the course of loading, some of the backlog is used along with the coal brought to the tipple by trucks direct from the stripping. This insures a continuous supply of prepared coal for the train, and eliminates waiting time.

Statistics on the Queen

at the right front corner of the machine, provides good visibility. An 8-ft. wiper blade keeps the windshield clean on rainy days. The cab unit has an air-conditioning system.

Special high strength alloy steels are used in the shovel. The dipper is made of T-1 steel. The dipper handle and boom are Tri-ten steel. Both alloys are products of United States Steel Corp.

Fifteen General Electric motors power the *River Queen,* eleven for digging and four for propel. The main motors are two 1,500-hp DC motor-generator-set, synchronous-driving units. The main functional DC motors consist of four hoist motors rated at 375-hp each; three swing motors at 187½-hp each; two crowd motors at 187½-hp each; and four 200-hp propel motors.

Big Crawlers

The propel motors drive four crawler-type trucks each weighing 220 tons. Each crawler unit is 13 feet 5 inches wide, 26 feet 9 inches long and 10 feet 9 inches high. The ground man directs the machine's crawler movement (0.2 mph) from an electrical-control box mounted on the base of the machine.

Power to operate the shovel is supplied from a skid-mounted substation which receives 34,500 volts from Kentucky Utilities Co., and cuts it down to 4,160 volts. The 3,750-KVA skid unit can be moved overland on 30° slopes. A grounded neutral in the 4,160-volt system provides personnel and equipment protection.

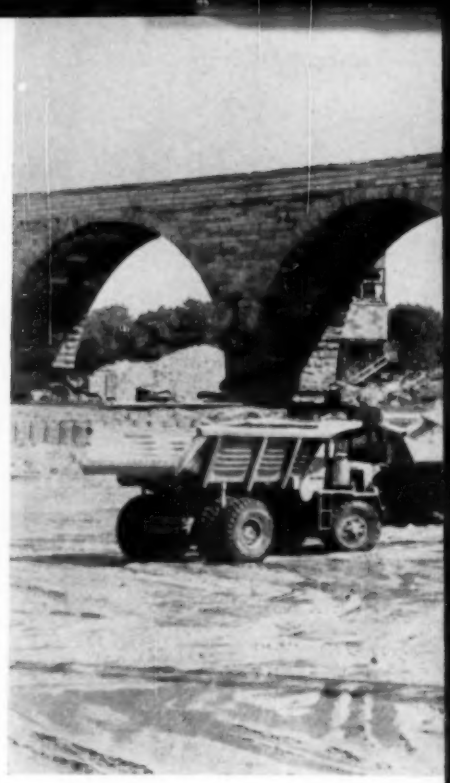
Lubricating greases and oil are supplied by Ohio Oil Co. (Marathon) and by Whitmore Mfg. Co.

Ready to work the *River Queen* weighs 4,850,000 pounds, including 900,000 pounds of ballast.

Big as the 1650-B shovel is, it is interesting to note that Peabody next year will be stripping at a nearby mine with a new super-shovel over three times as large. The giant model 3850-B, now being fabricated by Bucyrus-Erie, will carry a 115-yd. dipper. The new machine will be as high as a 28-story building and will weigh as much as a light cruiser.

It will work in a new Peabody mine in Muhlenberg county that will supply coal for operation of a large TVA steam generating plant under construction near Greenville, Ky.

Minneapolis Lock Stays On Schedule Despite Triple Threat



Rapid water seepage, tough digging and cramped quarters plague contractor but, like Old Man River, the job keeps rolling along.

WATCH out for the first step, it's a big one. That is what barge pilots on the Mississippi will be saying in 1963 when the upper lock of St. Anthony Falls opens for business. The lift there will be the highest on the river—49.2 feet. Minneapolis industry will benefit when for the first time, barges will be able to reach the heart of the city, 4.6 miles above the present shipping limit.

Since November 1959, St. Anthony Constructors, a joint venture team of Al Johnson Construction Co., Minneapolis and Peter Kiewit Sons' Co., Omaha, Neb., has been at work under a $9½ million contract to meet the lock's completion date of July 1963. The same contractors completed the nearby lower lock and dam in 1956. Both projects fall under the supervision of the St. Paul District, U. S. Army Corps of Engineers.

Hank Cermak, project engineer for the contractors, said that "a triple-threat of problems—tough rock excavation, rapid water seepage and cramped working quarters—has faced the project from the start." All three problems have been solved and the job has remained on schedule.

Before construction of the lock structure could start, excavation of the dewatered lock area to elevation 710, 40 feet below the normal elevation of the river, had to be accomplished. Removal of a tough limestone cap amounting to 23,000 yards of excavation was the first problem encountered. Cermak pointed out that this phase of the digging could have been easily accomplished with blasting. The many old structures in the area, however, prohibited this method. "Then too," he added, "blasting would cause too much disturbance in the already weak-seamed sandstone bedrock and the water seepage problem would increase." A profile of the subsurface rock here reveals a 14-ft. layer of McGregor limestone and a 3-ft. layer of Glenwood shale overburden covering the bedrock.

Limestone Removal Tough

The limestone cap was removed the hard way—line drilling, ripping, breaking with a frost ball and, finally, shovel loading. An efficient quartet of machines moved in to handle the job. The contractor's own innovation, a "Rube Goldberg" device consisting of a Cat tractor frame carrying its own drill and hooked up to an Ingersoll-Rand 600 compressor, took over the line drilling. The home-made rig's mobility helped considerably in speeding up the tedious rock-removal chore. The limestone was then ripped loose by an International TD-24 equipped with a hardened-tooth rooter. Final step in the rock breakage was achieved with a 5-ton frost ball swung by a Bucyrus-Erie 54-B crane. Following closely, a 2½-yd. Northwest 80-D shovel scooped out the broken rock.

Of the 338,000 yards of excavation, 315,000 yards consist of St. Peter sandstone. No ripping or breakage is required, for the material breaks up under slight pressure from the shovel's dipper. The Northwest 80-D, used on the limestone removal, handles the sandstone easily and the 2½-yd. dipper comes up heaped on every swing.

(Left) **Water seepage problem is evident here as Payhaulers move heaped loads of St. Peter sandstone from lock area to on-site storage area. Material makes good fill for guidewall cells. Notice repair shop built into arch to conserve space.**

The shovel loads out a fleet of five Internationals — two 9-yd. RF-214 dumps and three 95 Payhaulers. Hauling is all on-site, for the sand is used to fill guidewall cells. At peak production, the excavating crews moved out over 3,000 yards of material in three 8-hour shifts.

Assisting the 80-D in earthmoving chores, the contractor has two International TD-20 dozers and one TD-24, plus a Cat 977 Traxcavator. Handling clean up chores and maintenance of haul roads is the job of a Cat No. 12 motor grader. The dozers clean up around the shovel and maintain disposal areas.

At the time of *Excavating Engineer's* visit to the project, excavation was temporarily halted because of the excess water problem. Water was seeping in through the cut-off wall across the upstream end of the lock area at a rate faster than could be handled by the wellpoint and sump pump system.

Complete dewatering of the lock area has proved to be an intricate, difficult task. The job is a constant battle against the river current which is restricted to a narrower channel. To start, the entire lock structure area was sealed off by installing a sheet pile cut-off wall. Deep-seated 52-ft. long steel sheet pile diaphragms have been driven to elevation 700 or 50 feet below the lower pool elevation of 750. The pilings were jetted with specially designed, high pressure water jets having an average pressure of approximately 200 psi. Piles are driven by McKiernan-Terry No. 7 and No. 10-B-3 pile hammers and a Union No. 1 hammer supported by a Manitowoc 3900 crawler crane and a Bucyrus-Erie 54-B crawler crane. A McKiernan-Terry model E-4 pile extractor is used to pull pilings. The steel sheets are driven down as far as elevation 700 even though the lowest foundation will be at elevation 709.8.

Pumping is handled with a filtered sump down to elevation 722 but from this level to below subgrade, dewatering is achieved with wellpoints. About 250 points spaced on 6-ft. centers enclose the area. The holes in the sandstone in which the wellpoints are in-

(Right) **Chemical solidification crews pump sodium silicate and calcium chloride mixture to a depth of 40 feet below river surface to form an impervious seal on upper guide wall.**

(Left) **Payhauler takes on load fast as 2½-yd. Northwest 80-D shovel scoops out loose sandstone.**

stalled are jetted to position by means of a specially designed jet working inside a 12-in. casing. After the hole is jetted and flushed out through the casing, the wellpoint is placed in the hole and the hole is backfilled with graded filler material to prevent leakage of the fine-grained sandstone into the points.

The John W. Stang Corp., Omaha, Neb., is acting as dewatering consultants for St. Anthony Constructors. Four pump sets-ups are in operation, each consisting of one electric pump and one propane gas pump. The propane units serve only as emergency pumps in the case of power failure.

Workhorse on the earlier portions of the job was the 60-ton Manitowoc 3900. Equipped with 120 feet of boom, the crane was used to set the cofferdam cells, install well points and on various pile driving chores. Both the 3900 and the 54-B, equipped with a 90-ft. boom, were used with clamshell buckets to fill the 23 cofferdam cells.

Included in the diversion is the construction of a granite slab training dike between the upper and lower locks. The currents from the upper dam spillway toward the lower lock are such that, without the dike, tows attempting passage between the locks would be swept toward the shoreline with great force. Eventually, too, this current could cause extensive damage to the lower lock structures.

When water continued to seep through the upper cut-off wall, chemical solidification was needed to keep the excavation on schedule. Soil Solidifiers, Inc., Minneapolis, is the consultant on this job. What is known as the "Joosten process," in which a mixture of calcium chloride and sodium silicate is pumped under high pressure to the troublesome area to form an impervious seal on the wall's surface, is being tried with success.

Hank Cermak said that, in this instance, chemical solidification was made more difficult than usual because of a high hyrostatic head at the upper guide wall and because of the nature of the sandstone itself. St. Peter sandstone is a relatively soft and friable material consisting of about 98% quartz sand. It is water bearing and contains practically no cementing material. Difficulty is caused by the fact that the sandstone is subject to seam blowouts and erosion under very small heads of water.

Despite the soil solidification and the extensive cofferdam cells and steel diaphragm pilings, there is always some water inside the construction area and the pumps must complete the job. Placing of concrete had to wait until all dewatering problems at subgrade were solved, for all concrete must be placed on a dry subgrade. Pumps used are one 14-in. Fairbanks-Morse turbine type electric, two 8-in. Layne electric and one 10-in. Layne diesel standby pump for dewatering to elevation 722.

On the wellpoint system, Stang pumps are used by the consultant. Two pumps are at hand on each set-

Bucyrus-Erie 54-B clams sandstone fill into lower guidewall cell. A total of 23 cells are required to complete upper lock diversion.

Revamp Historic

Great Northern Railroad stone arch bridge, built in 1883, will soon undergo alteration. Arrow points to support that will be removed and replaced with steel deck truss.

WORKMEN at the St. Anthony Falls upper lock will soon begin a tricky, and closely watched, bridge alteration job. The Great Northern Railroad stone-arch bridge, spanning the Mississippi River in the heart of industrial Minneapolis, unfortunately stands directly in the path of the new upper lock. As always, the old must make way for the new.

To make room for future river traffic, one pier of the bridge must be removed. It will be replaced with a steel deck truss. Bill Schultz, assistant resident engineer for the St. Paul district, U.S. Army Corps of Engineers, speaks of the historic stone-arch structure with the respect of an engineer for any well-built structure. He explains that when James J. Hill, one of the giants of railroad history, built the span in 1883, he built it to last.

Seventy-eight years later, the structure is still in good condition,

Bridge

able to carry all heavy trains in operation today. In fact, this historic structure carries all of 32 passenger trains each day and is utilized by five railroad lines—Great Northern, Chicago Great Western, Chicago & Northwestern, Northern Pacific and the Minneapolis & St. Louis.

The problem, Schultz says, is that the people of Minneapolis have always taken a great pride in the impressive bridge. It is a part of the scene just as are the grain elevators and flour mills. "There aren't many bridges like this one any more," Schultz adds.

Being a stone-arch structure, a removal of any part of the whole is a tricky job. One wrong move of the keystone before the bridge is properly supported and the whole structure could tumble into the Mississippi River.

By carefully removing only one column and replacing it with the steel section, the over-all appearance of the bridge will not suffer drastically. Everyone remains happy while, at the same time, progress on the Upper Harbor project is not retarded.

Looking the project over are *(left to right)* W. L. Schultz, assistant resident engineer, Corps of Engineers; H. C. Cermak, project engineer, and Oscar McCormick, project manager for St. Anthony Constructors; and C. W. Buending, resident engineer, Corps of Engineers.

***(Above)* Cat 977 Traxcavator cleans up around 54-B and assists in lock excavation. *(Below)* Lorain MC524 mobile crane swings a 10,000 pound "skull cracker" to remove part of old masonry dam at upstream end of lock.**

up, one electric and one propane gas unit on standby in case of power failure. All the Stang pumps are 8 and 10-in. diameter.

One of the major problems on the upper lock job is cramped working quarters. Field office trailers and shacks are sandwiched in between haul roads and bridge supports. Large equipment has trouble finding enough room to turn around in, and parking and storage space is almost non-existent. When the contractor moved in, one of the first needs was a good repair shop for the big equipment spread. The only trouble was, that with bridges, train tracks, flour mills and old canals scattered in every direction, there wasn't an open spot available for the shop. Solution—build the repair shop into one of the huge arches of the Great Northern railroad bridge. Permission was granted by the railroad, and the master mechanic had his shop in quick

Wellpoint casing is driven to elevation 710, about 40 feet below the river surface. About 250 wellpoints spaced on 6-ft. centers enclose the lock area.

Workers backfill area around wellpoint after casing is removed. Graded filler material prevents fine-grained sand from clogging point.

Excavation comes to a temporary halt as water seepage become acute. Manitowoc 3900 unloads pump from truck as workers in background continue with chemical dewatering.

Downstream view from stone arch bridge shows granite training dike leading toward lower lock and dam and C. S. Johnson concrete batch plant.

order. Other congestion problems have been cleverly solved by the contractor. Previously excavated approach channel areas are used for storage of backfill material and Nicollet Island, which is off the job site, is used for storage of steel.

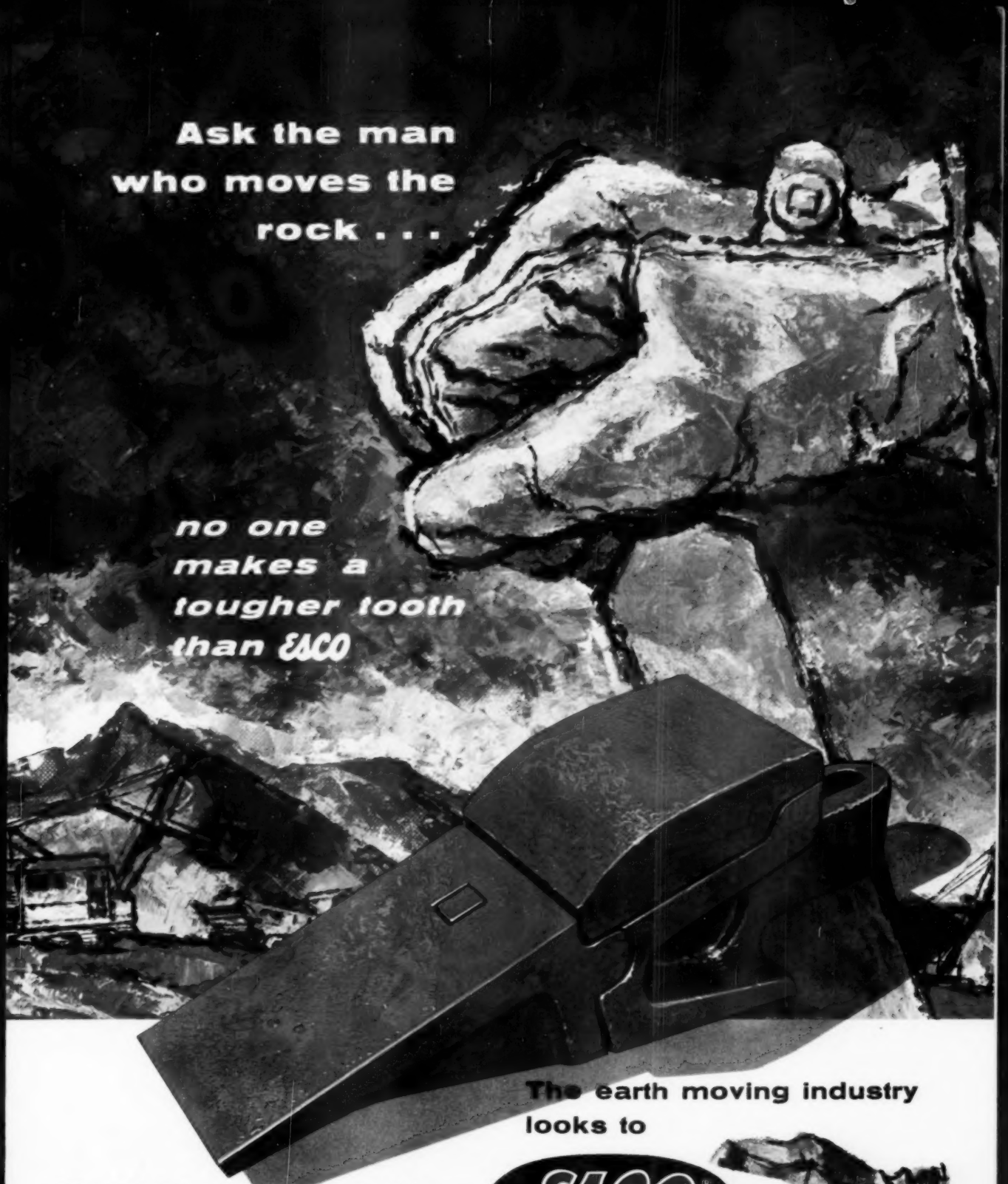
Dewatering and final excavation to elevation 710 has been completed and construction of the lock is underway. The first concrete was placed on October 18, 1960. Concrete is being produced in a recently installed C. S. Johnson automatic batch plant. The plant is equipped with two 2-yd. Koehring tilting mixers and is fed by a 360-ft. long inclined 24-in. conveyor. Hank Cermak said that he expects the concrete pour to average about 500 yards a day. The plant has a capacity of 100 yards per hour.

Use Big Buckets

A rubber-tired Michigan 175-A front-end loader charges the plant, feeding materials to the inclined conveyor belt. Concrete is hauled to the lock in 4-yd. Gar-Bro concrete buckets on flat bed trucks.

Materials for the concrete operation are shipped to the project by barge, truck and rail. The 160,000 barrels of Lehigh cement will be shipped by rail from Mason City, Iowa. Over 75,000 tons of sand is being supplied by Arsenal Sand and Gravel Co., New Brighton, Minn. Crushed limestone coarse aggregate

Continued on page 19



The earth moving industry looks to

ESCO

The right design, the right steel, the right shape make *ESCO* Two Piece Teeth right for every digging condition.

ESCO Corporation
PORTLAND, OREGON and DANVILLE, ILLINOIS

See reverse for shapes and size range

Here are the points to remember...

Each easy-to-change ESCO Point is Brinell tested to assure exactly the right degree of shock-absorbing toughness and abrasion-resisting hardness for longer life. Abrasion resistant Wear Caps (illustrated) extend adapter life.

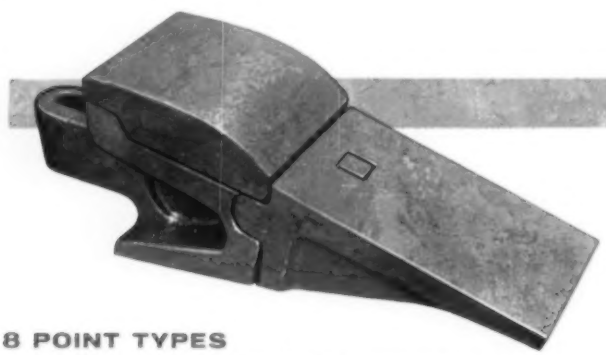
12M ALLOY STEEL

ESCO 12M Two Piece Teeth are the toughest you can use. Developed through years of research for the earth moving industry, cast *ESCO* 12M is the finest steel made for severe shock and abrasion.

ESCO TWO PIECE TEETH

for all your digging equipment

Your *ESCO* dealer can supply two piece teeth for all your equipment. Consult him about standardizing on *ESCO* teeth for the added advantages of quantity purchasing and reduction of on-the-job inventories.



WEAR CAP ADAPTERS

The ESCO Wear Cap Adapter, winner of the Blue Ribbon Mining Award, is the most rugged tooth assembly ever developed for handling tough rock and taconite. Replaceable wear caps sharply increase service life by protecting the adapter from wear. No special pins or welding required.

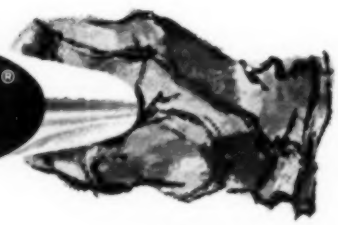
8 POINT TYPES
FOR EVERY DIGGING CONDITION

GENERAL PURPOSE | ROCK | ROCK PICK | PICK | SHARP FLARED | SHARP | SHARP LONG | RIPPER

ESCO Corporation
2143 N. W. 25th AVE. • PORTLAND, OREGON
1017 GRIGGS ST. • DANVILLE, ILLINOIS

MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.
Offices in Most Principal Cities
ESCO INTERNATIONAL, NEW YORK, N. Y. • IN CANADA ESCO LIMITED

ESCO®



LITHO IN U.S.A.

Concrete for 400-ft.-long lock is placed by American R-20 HHE gantry crane with a 155-ft. boom. Total placing requires 150,000 yards of concrete. When lock is completed in 1963, barges will reach industrial heart of city, 4.6 miles above the Falls.

Lock . . .

Continued from page 16

is supplied by the J. L. Shiely Co. at Gray Cloud Island below St. Paul. Barges are bringing in 210,000 tons of the aggregate using the new lower lock. Fill material for cofferdam cells is right at hand and plentiful. The similar guidewall cells each contain 16½ yards of St. Peter sandstone per foot of height.

A giant American R-20 HHE revolver gantry crane with a 155-ft. boom has been erected at the site and will place most of the 150,000 yards of concrete for the lock structure. When the lock is completed, it will measure 56 feet wide by 400 feet long. It will accommodate two standard barges, each 195 feet long by 35 feet wide plus a tug boat 65 feet long by 18 feet wide moored alongside. The floors and walls of the lock are joined by reinforcing steel bars averaging 2¼ inches in diameter and 35 feet long. These heavy steel bars are reported to be the largest ever used in the area. The lock calls for about 7 million pounds of steel.

Basic construction of the upper lock is scheduled for completion in July 1963. A penalty clause of $300 a day after 1,200 calendar days has been set for the lock only and is effective starting February 1963. At peak production, three eight-hour shifts are being worked five days a week by a labor force of 90 to 100 men.

Mobile Cranes Used

The joint venture's equipment spread includes two 30-ton Lorain MC524 truck cranes. Both are equipped with 70-ft. booms and were used to erect the giant American gantry crane plus various other lifting chores on the lock construction. The truck lineup includes five ½-ton Chevrolet pick up trucks; one 2-ton Chevrolet flat-bed welding truck; one 2-ton Chevrolet service truck; and one International RF-195 semitractor used with a 30-ft. Dorsey flat-bed tandem trailer.

The St. Anthony Falls Upper harbor project is authorized by Congress in the River and Harbor Acts of 1937, 1945 and 1958. Besides construction of the lower dam and lock and the upper lock, the acts provide for extensive channel dredging to provide a 9-ft. deep channel, a minimum of 150 feet wide. Approach dredging from the lower lock to the upper was completed last June by the Missouri Dredging Co., St. Louis, Mo. The $246,000 contract called for removal of 60,000 cubic yards of material including all of Spirit Island. Most of this dredging consisted of removal of heavy rock and debris.

District engineer for the St. Paul District, U. S. Army Corps of Engineers is Col. W. B. Strandberg. The St. Anthony Falls upper lock project is under the direct supervision of C. W. Buending, resident engineer and W. L. Schultz, assistant resident engineer. George E. Lyon is chief, engineer division and Harry M. Markus is chief, construction division.

St. Anthony Constructors is headed by Project Manager Oscar McCormick and Project Engineer Hank Cermak.

The benefits of the St. Anthony Falls project to Minneapolis will be many. Minnesota's largest city will be directly connected by water to the Gulf of Mexico, the Missouri and Ohio river systems and with the Great Lakes by way of the Illinois Waterway. An estimated 2,250,000 tons of various commodities will be handled at the Minneapolis freight terminals after completion of the Upper Harbor.

Tandem pushing with D9 Tractors...
"WE'RE 25% AHEAD OF SCHEDULE"

V. H. RIEKE, SUPT.

It's a case of a good thing made even better. Grosshans and Peterson Inc., of Marysville, Kansas, have long been sold on the advantages of tandem loading. Now they are more enthusiastic than ever. The reason? Their new tandem pushing equipment. Vincent H. Rieke, superintendent on the contractor's two million yard Interstate 235 job near Wichita, reports, "Our two new Cat D9E power shift Tractors with Pushin'-Cushin'* attachments have increased our pusher production 20-25% over our older uncushioned units. We've had to bring in two more scrapers to keep up the pace—are 25% ahead of schedule."

The Cat D9E Tractors in tandem get full loads . . . fast loads. In addition to power, two factors ideally suit the D9 to this task: the power shift transmission permits split-second, on-the-go speed changes with finger-tip ease to meet changing load requirements; and, the special pushloading equipment allows smooth, on-the-run contact with scrapers, eliminates dead seconds from loading time.

Tandem pushloading may be a real money-making proposition on your job. Your Caterpillar Dealer will be glad to discuss job requirements, demonstrate the D9 and its complete line of pushloading equipment. See him soon.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

* Mfd. by Pushin'-Cushin', Inc., Perry, Kansas

WHY D9E GIVES YOU EXTRA PROFIT ON EVERY JOB

POWER 335 HP turbocharged D353 Engine provides muscle for big loads, is dependable and economical.

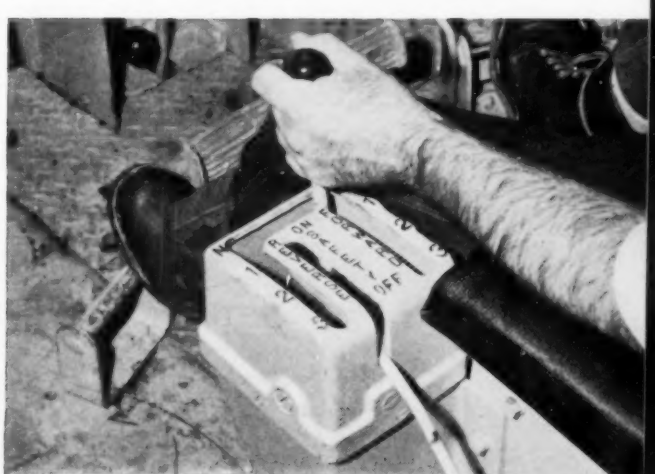
MASSIVE UNDERCARRIAGE New high in durability. Quality materials and selective heat treating extend life on toughest jobs. Cam-type equalizer bar provides superior sidehill stability, increases operator confidence.

TORQUE-DIVIDER POWER SHIFT TRANSMISSION (optional). Shift on-the-go in a split second with finger-tip ease . . . even under full load. Exclusive torque divider combines anti-stall characteristics of a torque converter with operating snap of direct drive.

PLUS: Lifetime lubricated track rollers, easy-to-service dry-type air cleaners, convenient hydraulic track adjusters. Unexcelled operating ease, comfort and safety.

Caterpillar offers the most complete line of big-tractor attachments and tools available to keep your production profitable.

Smooth on-the-go contact . . . up to 3 MPH! Pushin'-Cushin'* is one of several specialized pushing attachments available for the D9E. Attachments like this increase the machine's usefulness.



The Cat power shift transmission is designed to give you plenty of power fast in the highest gear possible. Ease of shifting lets operator get more work out of the tractor, lessens his fatigue.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BOOST PRODUCTION WITH D9 PUSHER TRACTORS

Powley's equipment is a familiar sight in Peoria. Here a 1-yd. dragline loads material into trucks on a building leveling job.

From Mule-Drawn Hand Scoop to Modern Contracting Firm

Clarence Powley claims he owes his success to "breaks in the game." Whatever the reason, this company has come a long way since its small start in 1928.

by Syd Jamieson

Mountains of processed material are on hand in stockpile area. Plant is capable of producing 300 tons per hour of washed and road gravel.

CLARENCE A. Powley in thirty years of hauling, excavating and operating a sand and gravel pit still recalls pre-depression days when he left high school in 1928 and started excavating basements with a hand scoop drawn by a mule and horse team. The team was given Powley by his father to help him start out on his own. It was the beginning of a successful and progressive series of events which forms the foundation of the C. A. Powley Co. operations today.

Bordering U. S. route 24 on the outskirts of East Peoria, Ill., the C. A. Powley Co. general offices and headquarters is a thriving center of activity. Nestled in a shallow draw surrounded by farm land, the company is well known throughout a 50-mile radius as an efficient productive organization capable of meeting the needs of a growing metropolitan area. It is an area which, like many other metropolitan regions, is experiencing the impact of increased population, home building boom and traffic congestion reaching in and out of a thriving city such as industrial Peoria. This impact has resulted in the immediate need for road material, construction and hauling equipment. Powley has answered this need and more.

To Clarence Powley the success of his operations is not the result of preconceived planning, but the culmination of what he frankly refers to as "breaks in the game."

A typical example of Powley's belief dates back to 1933 when a former representative of Peoria Tractor & Equipment Co. took back some old Holt tractors to erase a $300 bill Powley owed on used equipment. "After those lean years I was tickled to death," Powley commented. "I never reached that point where I had the money to purchase new equipment—always buying used machines. When Mr. McAuslin (now retired) told me: 'Clarence, give me back those machines and I'll mark your bill paid in full' . . . well it sure made me feel good to do just that."

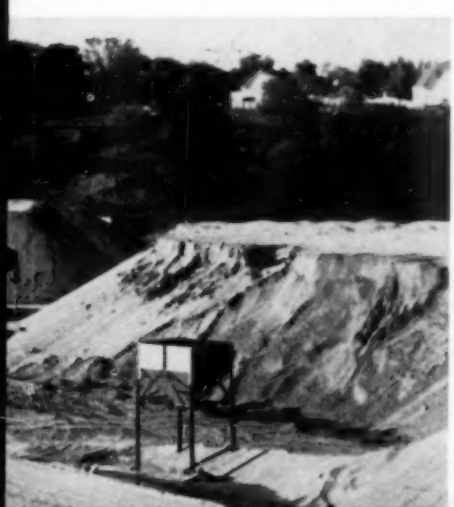
Powley's interest for contracting stemmed from working for his father on weekdays after school and on Saturdays. At that time his father was engaged in the teaming business and the bulk of his work was in the excavation of basements for new homes. The steady work prompted the younger Powley to leave school and contract on his own. Taking a tip from his father's main source of employment he did not neglect the ready market for basement excavation. Business was so good that at one time Clarence had seven teams of horses detailed for this type of work.

Aside from this operation, he soon found hauling was an important phase of contracting and provided an additional source of income.

Utilizing his teaming stable, Powley began hauling sand and gravel with dump-board wagons. In 1931 he purchased his first truck—a Chevrolet dump with 1½-yd. bed—a used machine. The depression was taking its toll in the number of available home construction and basement jobs, forcing him to sell his teams and concentrate toward the construction of road shoulders and driveways. This new market enabled Powley to acquire his first tractor—a used two-ton Holt which pulled an Adams motor grader.

Profits Low

By 1933 the area was recovering from the impact of the depression and business was on the upswing. However, servicing and maintenance on used equipment was needling away at his profit margin. The answer to this problem was the return to his first operation—basement excavation. Two years earlier he had bought a gasoline-powered Cat tractor with a Baker hydraulic dozer, one of the first hydraulic dozers manufactured in the United States. It was at this point that Powley soon realized shovels were becoming important to the contractor and to his list of equipment he added a Bucyrus-Erie 10-B. The success and dependability of this unit allowed him to acquire a second 10-B. In 1939 he traded his first 10-B on a 15-B. Business continued to improve and in less



The "breaks in the game" plus plenty of hard work by Clarence Powley *(above)* built the modern contracting and materials firm. *(Below)* Busy weigh station is well equipped and neat. Inside, the weighmaster, Bill Wright, and truck dispatcher, Bob Harbers, keep things rolling.

than a year a second 15-B was added to his operations.

This period also saw Powley buying his first new dozer—a Cat D7 with LaPlant Choate blade. The demand for hauling aside from his road jobs and basement work provided the opportunity of acquiring more trucks, mostly single-axle Chevrolets. During this same period he purchased his first endloader—a cable-operated D4 Traxcavator.

According to Powley his next major break resulted in subcontracting for Fred Harbers Sons on a job for plant expansion of Caterpillar Tractor Co. in East Peoria. The work was mostly excavation and demolition of the old Herschel Manufacturing No. 2 foundry which stimulated an idea for acquiring a gravel pit. He learned of the availability of an old township pit located on a 120-acre farm bordering U. S. route 24 in Tazewell county. In order to work the pit it was necessary for Powley to purchase the farm holdings to gain access to this source of supply from the highway.

This was soon accomplished and in 1941 additional farm land was purchased embracing 160 acres adjacent to the initial site. Four years later the first belt road was built to provide complete access to the pit. By 1946 Powley began digging operations and his first trucks moved gravel to the county and townships as road material. In 1948 the washing plant was installed. Today this plant is capable of producing 300 tons per hour of washed and road gravel. Gravel sizes begin at ½-in. and graduate from ⅜, ⅝, 1-in., size A and B and include two types of state specified road gravel No. 7 as well as a modification of No. 7½-in. The types of sand include mason, filter and concrete.

Powley employs a portable Universal plant in the pit for producing road gravel and a B-5 material for hot mix. The major plant is located near the company's general offices and weigh-station. Trucks presently highball from the pit area over a one-half mile run to a Pioneer 1036 crusher. Universal 60-ft. and 80-ft. conveyors move the crushed material to Simplicity 4 x 10 double deck screens and to 4x12 and 3x8 triple deck vibrators. Four 80-ft. and a single 100-ft. conveying units feed the sized material to stockpiles. Michigan end-loaders (two 175's and a 125) are used to load trucks from stockpiles in the gravel plant.

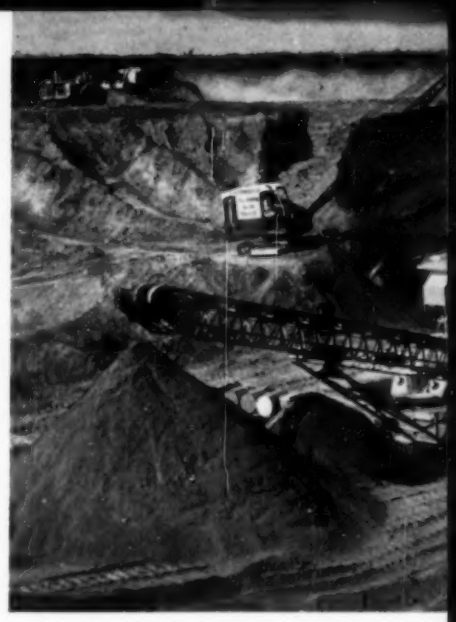
Pit production is delegated to a Bucyrus-Erie 22-B with ¾-yd. shovel and a 15-B with ⅝-yd. drag bucket. Powley utilizes the 22-B for feeding end dumps which haul their loads directly to the washer. The drag is spotted along the shelf above the pit floor and works the bank to supply material to the portable crusher.

Scrapers Remove Overburden

Overburden is removed by the use of tractor-scrapers. Dozers help in the pit area working banks and stockpiles. The pit is worked continually from end to end, thus maintaining a single floor and easy access for trucks and shovels.

Equipment generally detailed for construction jobs include a Lorain motor crane MC 254, an International lowboy for hauling, one Bucyrus-Erie 22-B, one 30-B, and the following Cat machines: five DW-21's, two No. 12 motor graders, one D9, three D8's, three D7's, one D6 endloader, and one each of the 955 and 977 endloaders. Powley also maintains a Koehring 305 backhoe. Haul units total 18 IH model 190 tandem dumps and five single-axle Chevrolets.

During a recent construction job which required moving nearly a million cubic yards of earth on a plant site preparation for the Central Illinois Light Co., Powley encountered difficulty in working the Illinois River bottomland near Bartonville a few



(Above) **The ⅝-yd. dragline is spotted along the shelf above pit and works bank to supply portable crusher. Pit is worked continually from end to end, maintaining a level floor for trucks and equipment.**

(Left) **Pit area is always alive with activity. Dragline feeds portable Universal mixer as scraper strips overburden.**

(Below) **Michigan endloader works in yard loading trucks. Four 80-ft. and single 100-ft. conveyors move material in background.**

miles south of Peoria. The contract called for fill for the plant site, railroad spur and ash disposal pit at CILCO's new E.D. Edwards substation and generating plant. The work required cutting down eight feet of some 80 acres for borrow material. Powley machines met with rough going in the wet alluvial clay. The wet bottomland sucked the big D9 tractors so deep when pushloading DW21-No. 470 tractor-scraper units that valuable time was lost in getting the big earthmovers out of the muck.

The problem was met in stride by pull-loading the DW21's with the use of a "stinger" attachment. The stinger acts as a towing boom for the D9's and is raised and lowered by means of a cable control unit mounted on the tractor. The boom is hinged to the tractor drawbar and a steel hoop is welded to the end of the A-frame in front. By use of the stinger attachment the D9's were able to work on high ground where compaction was better and which allowed the combined power of the D9 and DW21 to pull its load without spinning. This maneuver was accomplished by backing the D9 into position in front of the DW21 and engaging the stinger. After the scraper is loaded the DW21 increases its speed while the D9 operator releases the boom to disengage the two machines.

According to Powley, added strength was given the pull hooks on the DW21's to prevent possible damage from the heavy loads incurred. This application allowed Powley to complete the job on schedule and is a typical example of the experience and know-how with which the company has progressed.

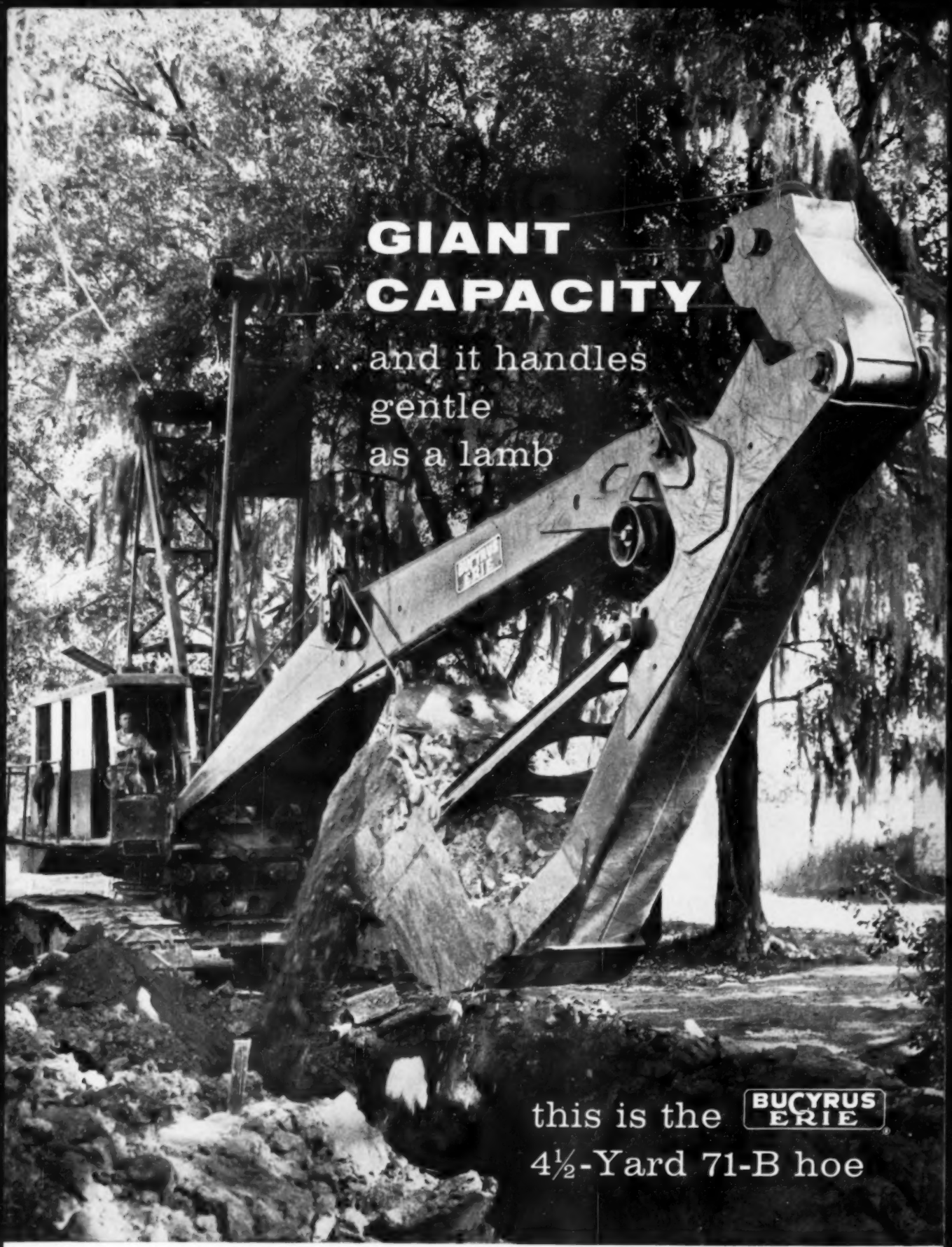
This same technique was being employed in removing overburden at the Powley plant in East Peoria due to unusually wet weather.

Good Reputation

Clarence Powley has made use of the "breaks," as he calls them—but whether it is the "breaks" or his keen insight for a successful business, the firm has made an enviable reputation in this central Illinois area. Much of this recognition Powley credits to "good loyal employees who make a business go." He confirms this belief by adding: "My brother Gilbert has been with the company nearly 25 years—since he was 17—others have been here even longer." This type of association coupled with dependability and service are qualities certainly to be considered in the ultimate success of any business operation today.

Officers of the company are: Clarence A. Powley, president; Gilbert Powley, vice president, and Mrs. C. A. Powley, secretary-treasurer.

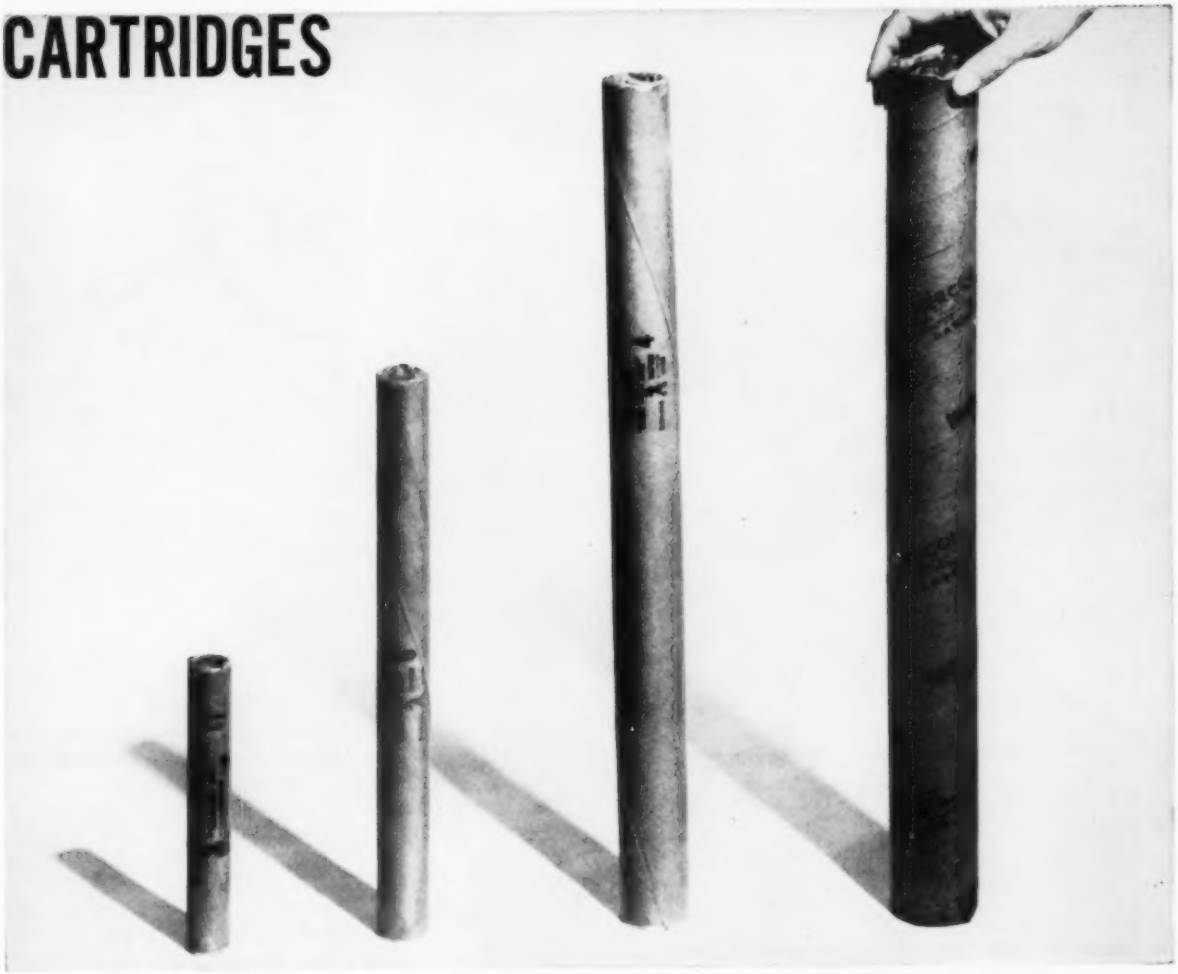
(Below) **Pull loading the big scrapers in wet alluvial clay. Cat D9 equipped with "stinger" towing boom engages hook on DW21 scraper.** *(Right)* **In drier area, push loading works well.**



6E61

BUCYRUS-ERIE COMPANY, South Milwaukee, Wisconsin

HERCOL®—A LOW-COST EXPLOSIVE—NOW AVAILABLE IN SMALL-DIAMETER CARTRIDGES



The Hercol series of low-cost, cap-sensitive, high-ammonia-content explosives are now available in cartridges of small diameters and standard lengths, as well as in the larger diameters and special packings.

The ability of Hercol to produce excellent fragmentation, its water resistance, Class 1 fumes, and high cartridge count—plus its low cost—have already been proved to the economy-minded quarry and open-pit operator.

Now that Hercol is manufactured in the smaller diameters, with Class 1 fumes, these same economies are available to the underground operator.

Contact the Hercules sales office nearest you or ask your Hercules representative for more detailed information on how Hercol can reduce blasting costs for you, too.

Properties of Hercol

	Hercol	Hercol 2	Hercol 4	Hercol 6
Fumes	Good	Good	Good	Good
Cartridge count—1¼ by 8-in. cartridges per 50 lb.	130	120	140	165
Cartridge diameter, in.	4 to 8½	1 to 3½	1 to 3½	1 to 3½
Weight strength, %	70	68	68	68
Cartridge strength, %	48	50	34	19
Water resistance	Fair	Good	Fair	Fair

A special grade of Hercol is formulated for seismic "pattern shooting" when the drill-holes are relatively dry.

Explosives Department

HERCULES POWDER COMPANY

INCORPORATED

900 Market Street, Wilmington, Delaware

XR60-1

BIRMINGHAM • CHICAGO • DULUTH • HAZLETON • JOPLIN • LOS ANGELES • NEW YORK • PITTSBURGH • SALT LAKE CITY • SAN FRANCISCO

NOT IN THE CONTRACT

"I certainly hope it doesn't rain today," one lady kangaroo remarked to another. "I just hate it when the children have to play inside."

A young man about town, approaching a cigar counter behind which stood a cute young thing, said: "Do you keep stationery?"

Said the cute young thing: "Yes, up to a certain point; then I just go all to pieces."

"I am beginning to suspect," said the bridegroom, "that your mother has a low opinion of me."

"Whatever makes you think that?" asked the bride.

Replied the groom, "Those towels she gave us are marked 'Hers' and 'Its'!"

The second-grade teacher strained to help a pupil don galoshes. After five minutes of grunting, the boy panted, "They were hard to get on me because they're not mine."

In despair, the teacher struggled to get them off again. Just as soon as they were off the boy said, "They're my brother's, but I wear 'em because I don't have any."

"I tell you I won't have this room," protested the little old lady to the bell boy.

"I'm not going to pay good money for a closet with a folding bed. If you think that because I'm from the country . . ."

"Get in, lady, get in," the bell boy cut in wearily. "This isn't your room, this is the elevator."

"How much longer is this going to take, lady?"

A slighly inebriated writer of radio commercials entered a one-arm eating joint, fixed a rolling eye on the counter girl and proclaimed: "Give me some ham, piping hot, fragrant with the rich aroma of cloves, brown sugar and steaming sauce. Serve it between slices of brown and crackly crusted bread. Draw me a cup of rich, flavorful coffee and add to it some thick, rich cream."

Counter girl (shrugging her shoulders, turning toward kitchen and yelling): "Pig on rye with java with."

Down South for a visit, the young Yankee made a date with a local lovely. When he called for her at her home, she was clad in a low-cut, tight-fitting gown. He remarked, "That's a beautiful dress."

"Sho 'nough," she drawled.

"It sure does," he replied enthusiastically.

A young wife of our acquaintance could teach her older married sisters a thing or two about how to keep a husband from working late night after night at the office. Three times in one week, her spouse had called to say he would be detained by a spate of unexpected work.

The fourth time it happened, she accepted it calmy as before. But just before hanging up, she inquired sweetly, "John, can I depend on that?"

He's getting all his work done during office hours these days.

Even a tombstone will say good things about a fellow when he's down.

An Englishman was conversing with the clerk at the Ambassador Hotel. "Here's a riddle," said the clerk. "My mother gave birth to a child. It was neither my brother nor my sister. Who was it?"

"I can't guess," said the Englishman.

"It was I," beamed the clerk.

"Very clever, very clever! I must

remember that one!" The Englishman then told the story at his club.

"Here's a riddle for you, Brumford," he said. "My mother gave birth to a child. It was neither my brother nor my sister. Who was it?"

"Dashed if I know," said Brumford. "Who was it?"

"The clerk at the Ambassador Hotel!"

The boat captain peered into the fog and suddenly saw a man leaning on a rail just a few yards away.

"Where do you think you're going?" the captain shouted. "I've got the right of way."

"Maybe so," called back the man, "but this ain't a ship. This happens to be a lighthouse."

"Mommy, Mommy," bawled the little girl, "Daddy just poisoned my kitty."

"Don't cry, dear," replied the mother sympathetically. "Maybe he had to."

"No, he didn't," screamed the heartbroken child. "He promised me I could."

A drunk was trying to walk down the street with one foot in the gutter.

"Come along, buddy, you're drunk," growled a cop.

"Thank heaven," said the drunk, "I thought I was crippled."

A senator once delivered a speech in a Swedish community of northern Minnesota. Although he gave what he considered one of his greatest addresses, he was disappointed by the utter lack of audience enthusiasm.

When he sat down, another speaker arose and addressed the group in Swedish. His words were received with thunderous applause. The tactful senator also applauded lustily. Then he turned to the chairman and asked: "What was that fellow talking about? He certainly went over big!"

The chairman replied dryly, "He was merely translating your speech into Swedish."

Minister presiding at a funeral: "Friends, all that remains here is the shell; the nut is gone."

Will Never Owe You Anything!

Your OWEN Clamshell Bucket starts making money for you from the first hefty mouthful it bites off . . . and keeps on making money because its rugged construction "stands up". It's the bucket with "The Big Bite that's Just Right!"

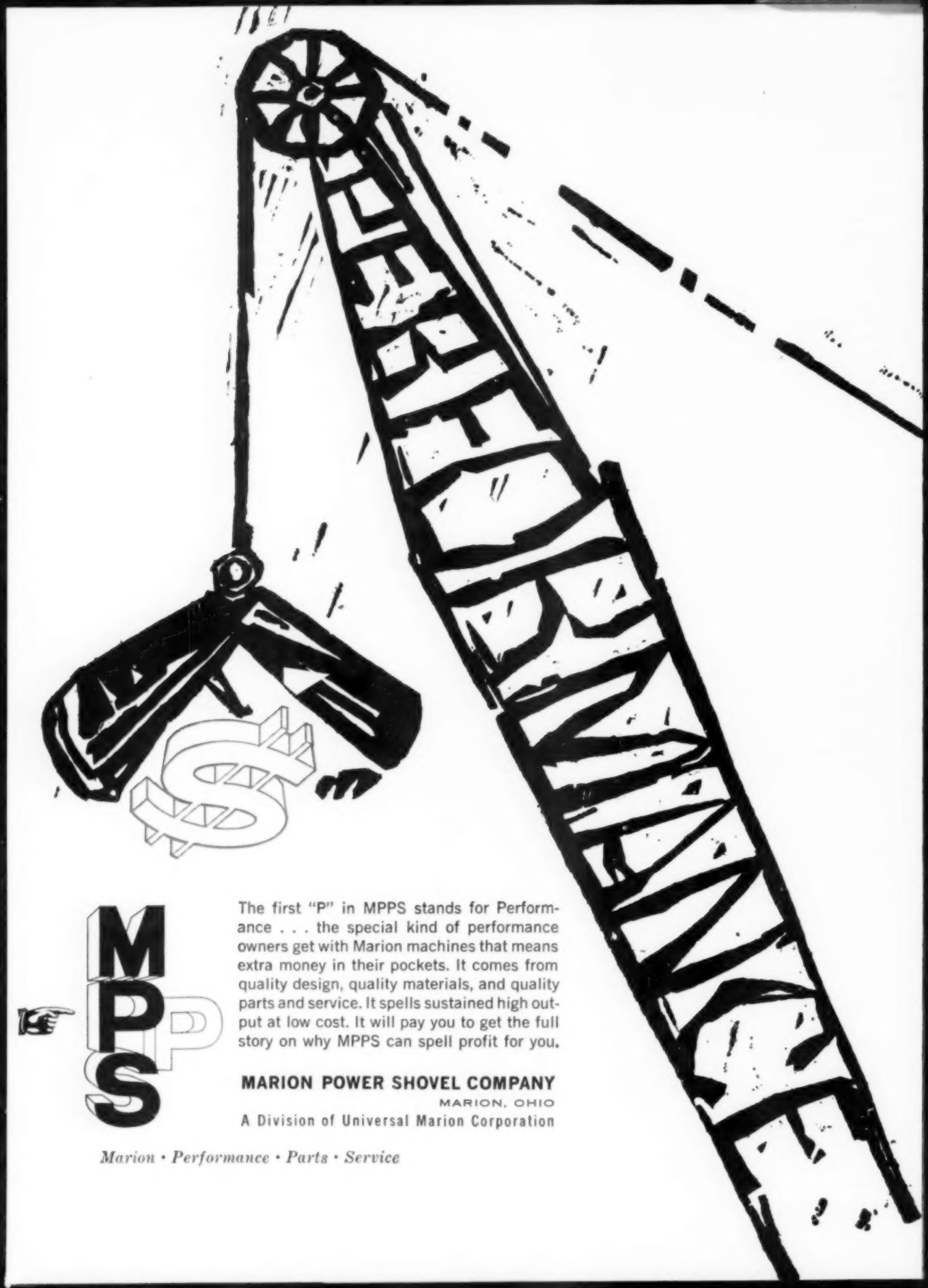
The OWEN has a strong appetite for work—an appetite that is never satisfied. These are exclusive features that keep it working for you:

Block and Tackle Type Reeving **Recessed Lips**
One-piece Head Construction **Single Main Shaft**
Riveted Bowl Assembly

Prompt service through ample inventory on new equipment and parts.

Write for OWEN information on how these features can make money for you.

The OWEN
BUCKET COMPANY
BREAKWATER AVENUE • CLEVELAND 2, OHIO
BRANCH OFFICES: New York • Philadelphia • Chicago • Berkeley, California • Fort Lauderdale, Florida



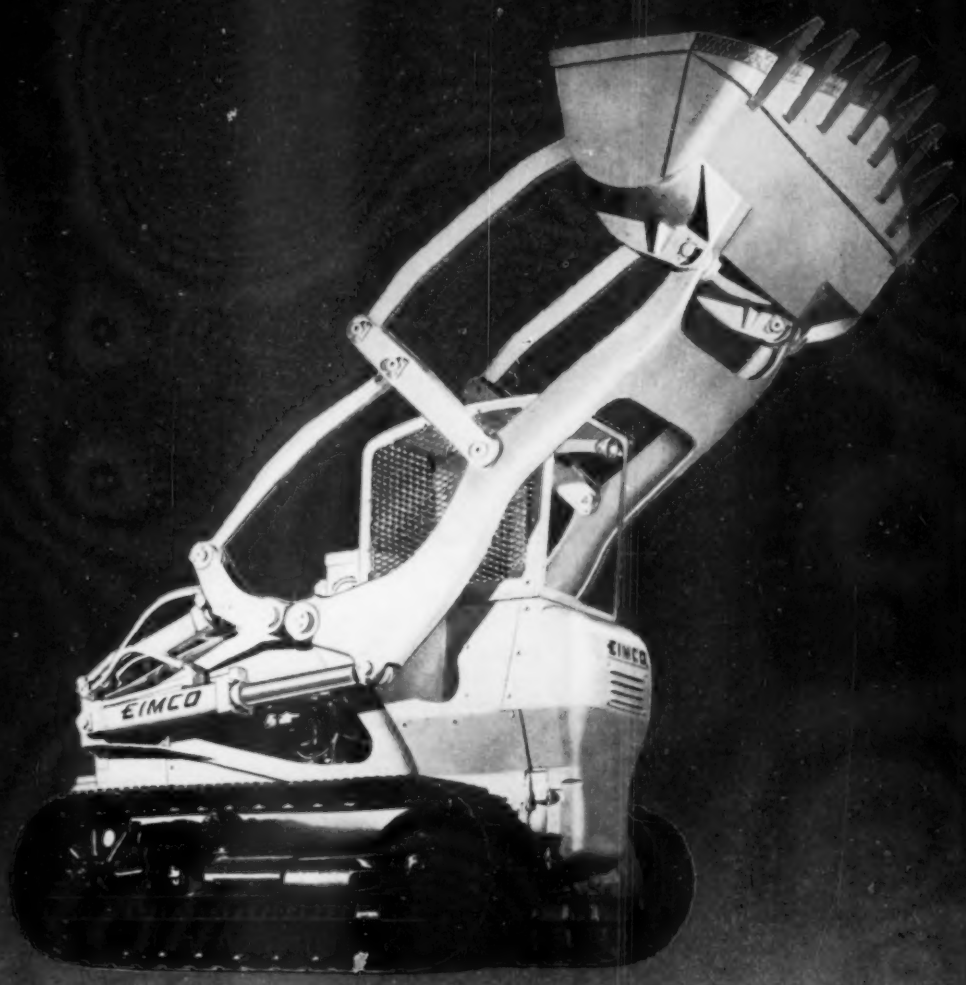
MPPS

The first "P" in MPPS stands for Performance . . . the special kind of performance owners get with Marion machines that means extra money in their pockets. It comes from quality design, quality materials, and quality parts and service. It spells sustained high output at low cost. It will pay you to get the full story on why MPPS can spell profit for you.

MARION POWER SHOVEL COMPANY
MARION, OHIO
A Division of Universal Marion Corporation

Marion • Performance • Parts • Service

THE QUALITY-BUILT EIMCO 123



Here is the finest, most productive Front End Loader in its class . . . the Eimco 123. It has a heritage of experience and success in rock loading that only Eimco, the world's largest producer of underground rock loading equipment, can offer. It will outproduce, outload, outmaneuver and outlast any other loader of its size and power. Strong claims? Sure, but we have strong facts to back them up. Check them at your nearby Eimco Dealer or Branch, or write The EIMCO Corporation, P.O. Box 300, Salt Lake City 10, Utah, U.S.A. for Bulletin LX-1097.

THE EIMCO CORPORATION

"Advanced Engineering and Quality Craftsmanship Since 1884"

Head Office: Salt Lake City 10, Utah, U. S. A.

TRACTOR LOADER DIVISION

DIVISIONS:
Tractor Loader • Mining Equipment
Filter • Process Engineers
Research & Development • Metals

EXPORT OFFICE:
52 South Street, New York, N. Y.
Branches & Dealers in Principal Cities Throughout the World

AFFILIATES:
Angola • Canada • France • Italy
Northern Rhodesia • Southern Rhodesia
Union of South Africa • United Kingdom

B-719

Scenery along the new highway is spectacular . . . so is grading. High fills were numerous; this one contains over 750,000 yards.

Oregon's Fantastic Coast Road

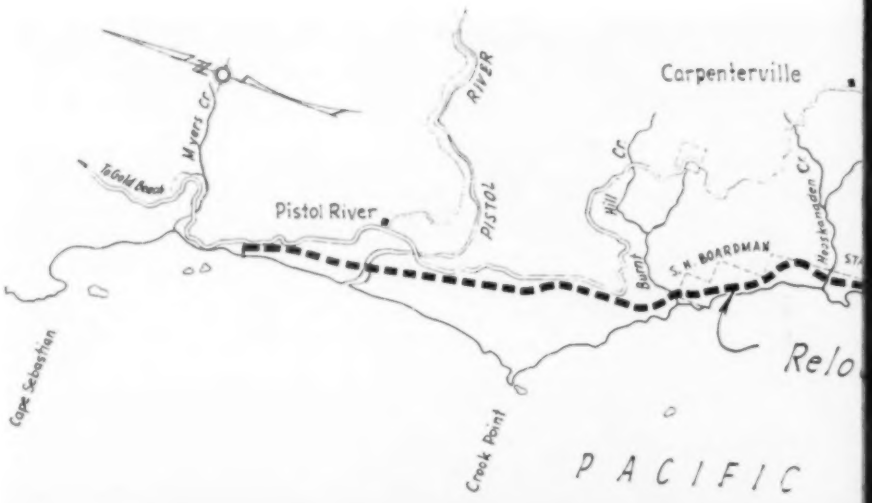
Rugged, scenic terrain requires fills 100 to 190 feet high at center line; huge drainage pipe installations handle heavy run-off from timbered slopes.

by Floyd Suter Bixby

ALONG southwestern Oregon's scenic coastline, cars now whiz at 70 mph, seldom out of touch with some of America's most beautiful scenery. The north Pacific—sometimes placid, sometimes wild—merges here with jutting capes and promontories, with evergreen studded gorges and mountains. Few motorists will ever know that Oregon highway engineers call it "the toughest road on earth."

It took a quarter century to plan this road, and $730,000 a mile to push a two-lane modern highway through incredibly rough terrain. Some 50,000 cubic yards of excavation were necessary in some places before contractors even started a fill at that location. In the first 15 miles, 17 fills range between 100 and 190 feet high at center line; several of them contain 750,000 cubic yards of material.

Because it's a country of heavy rainfall, timbered slopes and heavy runoff, three miles of perforated metal pipe had to be placed for every mile



of highway. Multi-Plate culverts 108 inches and bigger were the rule rather than the exception.

Photogrammetry proved so difficult that it put the Oregon state highway department in the aerial surveying business. The state now has its own cameras, has access to Forest Service planes, and owns its own computation and takeoff equipment.

F. B. Klaboe, Oregon's construction engineer, described the first 15 miles between Brookings and Pistol River when he said tersely, "I don't know how we ever designed and built it. But we did."

Lower Elevation

It was nearly a quarter century ago when far-seeing engineers under Oregon's revered R. H. (Sam) Baldock and the present Chief Engineer W. C. (Dutch) Williams conceived the idea of a modern high-speed alignment of the Coast Route. It would open up a land of beauty to the motorist, and even more important, give a snow-free route between Oregon and California over U. S. 101. By comparison, U. S. 99 farther east passes through much higher elevations and has a consequently greater snow-removal problem.

After much study, the general route was selected in the mid-forties by standard ground reconnaissance. Most of the right-of-way was purchased during the late Forties—in such a way that the people of the state now own most of the land between the highway and the ocean. During 1952, a ½-mile wide aerial survey was made covering the strip of land along the coastline. Contour maps under this contract finalized the route and established earthwork quantities to an amazing 5% accuracy. The final location was run in 1957 and minor field adjustments made.

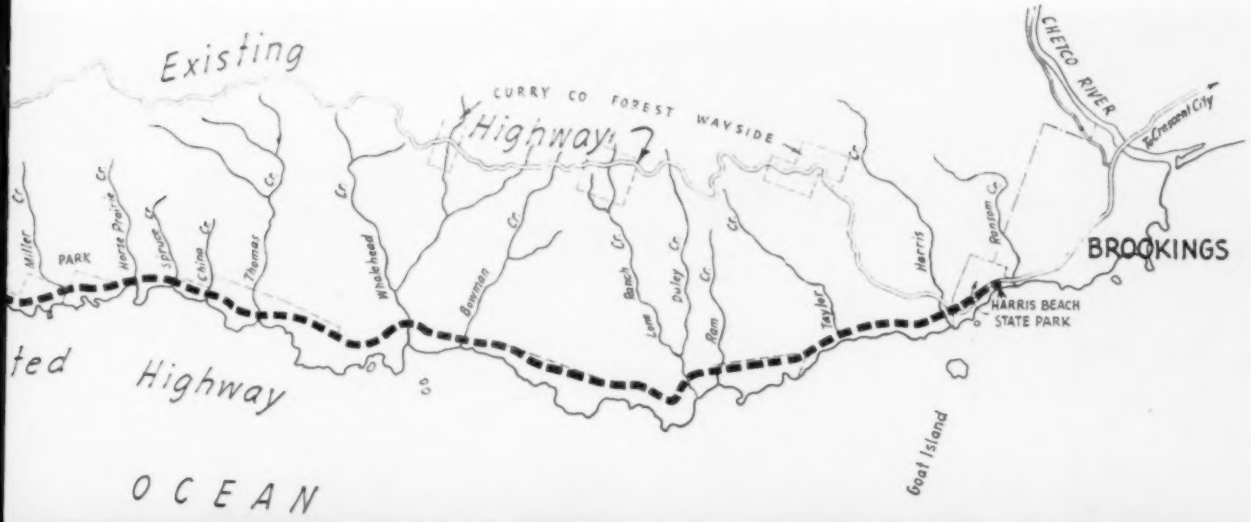
Photographers, amateur and professional alike, find the coast one of Oregon's finest areas for picture-taking. Alternating sandy beaches and rugged headlands are visible along most of 400-mile U. S. Highway 101. This scene is at Harris Beach state park near Brookings.

The new road between Pistol River and Brookings exemplifies what's to be done on other sections of the Coast Highway. It will be about 5½ miles shorter than the existing road. Its maximum elevation will be only 465 feet above sea level, compared to the present 1,715-ft. elevation at Carpenterville, now by-passed. Maximum curvature will be 6° on the new road; was 56° on the old. Total rise and fall will be reduced 2,400 feet, and 12,000 degrees of central angle eliminated.

Following the sale of $12,600,000 worth of bonds authorized by the 1957 legislature, heavy grading began. Peter Kiewit Sons' Co., Omaha, Neb., got the first contract between Cape Ferrelo and Brookings. Cape Ferrelo-Thomas Creek went to Darkenwald-Harms, a Sacramento (Calif.) concern. Morrison-Knudsen Co., Inc. of Boise, Idaho, got the Thomas Creek-Hooskanaden Creek section; Kiewit picked up again from there to Burnt Hill. Bethlehem Steel got the contract for the 957-ft. long, 350-ft. high Thomas Creek bridge.

As might be expected, grading has been rough. Schist, serpentine and clay soils are interbedded with better

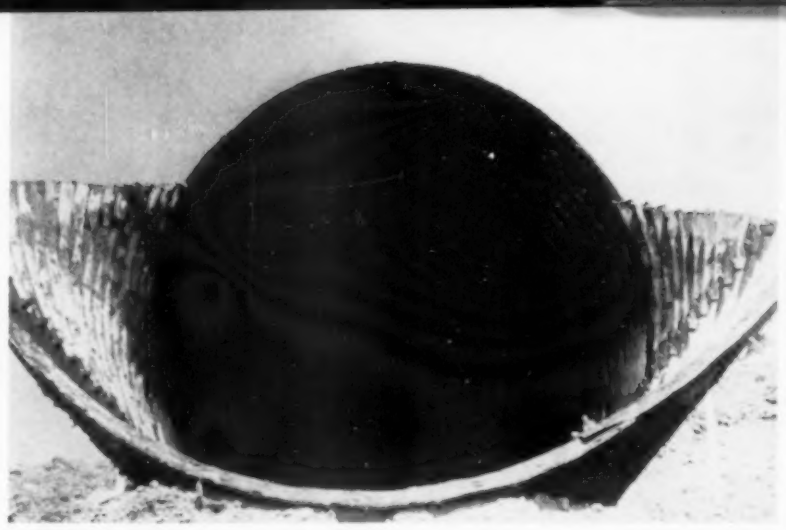
Map shows the relocation of U. S. highway 101 between Brookings and Pistol River. Big earth fills bridge numerous creeks.



sandstones and sandy soil deposits. Modern scraper equipment, drills, powder and dozers all helped to push excavation through.

The large quantity of perforated pipe represented a real effort by engineers to track down every possible source of underground water which might endanger the fills. Many of these pipes run water the year round. They'll be protecting the road long after the embankment's drainage patterns have been finally established.

One of the clever stunts has been the protection of pipe inlets from logs, stumps and debris typical of runoff in the sharp, V-shaped canyons. These canyons were filled upstream from the pipe inlets to provide a level floor on which debris can collect—and be removed. Many of these random fills were 50 feet high. They reduced footage of pipe used, and have cut maintenance costs and trouble.



(Above) **Outlet end of this drainage pipe shows flared ends which flatten the water at discharge point. Pipes were placed scientifically to build velocity at points; reduce it at others.** ***(Left)*** **A large-diameter pipe is beginning to bolt together.**

To develop required 90% Proctor density, contractors regularly mixed dry with wet materials, aerated wet materials, and often wasted totally unsuitable materials. When good rock was found, it was used along the sea for wave protection.

The first 15.023 miles will be open to 1961 summer traffic, previewing what's to come farther up the coast, and showing what modern highway engineering and construction can do.

(Below) **Twin-engined Euc scrapers dig a cut on Morrison-Knudsen contract section.** ***(Right page)*** **Scrapers work up and down a 40% grade from the cut area in the far background. Big drain pipe in foreground rests upon 150 feet of fill already in place, with the mass yet to rise another 150 feet.**

Tower Crane Up--
Building Costs Down

American-built crane drops labor 30% on first job; saves enough construction time to justify its purchase.

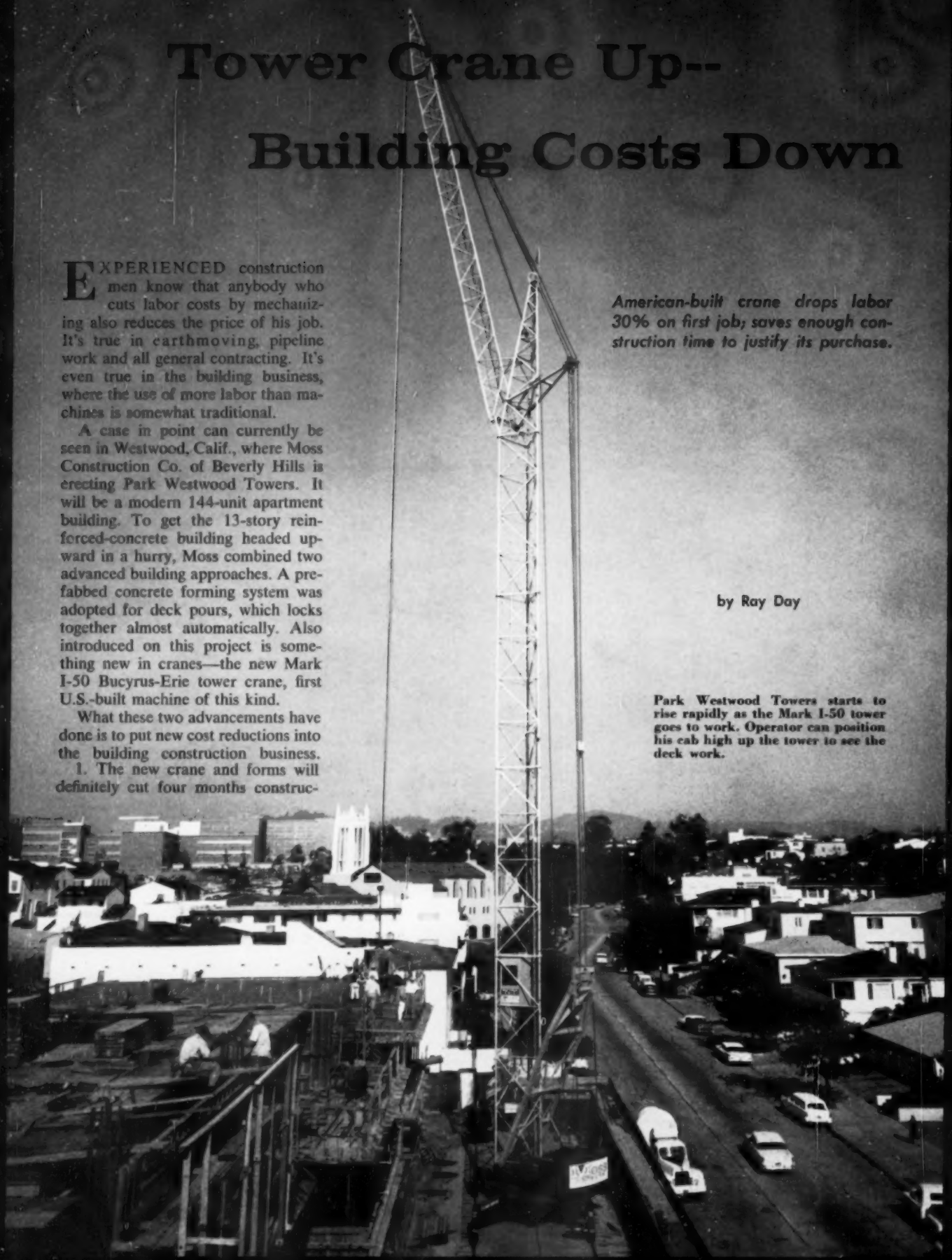
by Ray Day

EXPERIENCED construction men know that anybody who cuts labor costs by mechanizing also reduces the price of his job. It's true in earthmoving, pipeline work and all general contracting. It's even true in the building business, where the use of more labor than machines is somewhat traditional.

A case in point can currently be seen in Westwood, Calif., where Moss Construction Co. of Beverly Hills is erecting Park Westwood Towers. It will be a modern 144-unit apartment building. To get the 13-story reinforced-concrete building headed upward in a hurry, Moss combined two advanced building approaches. A prefabbed concrete forming system was adopted for deck pours, which locks together almost automatically. Also introduced on this project is something new in cranes—the new Mark I-50 Bucyrus-Erie tower crane, first U.S.-built machine of this kind.

What these two advancements have done is to put new cost reductions into the building construction business.

1. The new crane and forms will definitely cut four months construc-



Park Westwood Towers starts to rise rapidly as the Mark I-50 tower goes to work. Operator can position his cab high up the tower to see the deck work.

tion time from the 18 months normally needed for erecting this size building. It will put tenants into their apartments that much sooner. Assuming near-capacity occupancy, the monthly rental return to the owner amounts to $40,000 per month, or $160,000 for the four months. In addition, some interest on investment will be saved. The point is that the added apartment rental revenue *alone* justifies purchase of the new tower crane for its first job, and adds just about enough extra to pay for the rental cost of concrete forms.

2. Use of the two improved methods has reduced Moss Construction's over-all payroll by an estimated 30%, according to Owner Cecil R. Moss and his general superintendent, Jack Yocham. This is one job in building construction which doesn't have any concrete runways; no power or hand buggies. Yocham is handling the whole show with 57 men, including all crafts.

3. Construction of a $4 million building has been possible on the approximate 210 x 126-ft. site without leasing outside work room. It would have been impossible to establish a carpenter yard and to build concrete forms here without creating congestion to the nth degree.

4. The use of a conventional materials-handling tower, and an attendant hoisting engine and drums, has been eliminated.

Moss Construction's move proves something which has been demonstrated also in Europe. In 1960, Switzerland had the highest labor cost in European building construction. That country also had the highest tower crane population. Experts say it's safe to link the two factors. Where labor costs tend to force prices up, tower cranes will bring them back in line again.

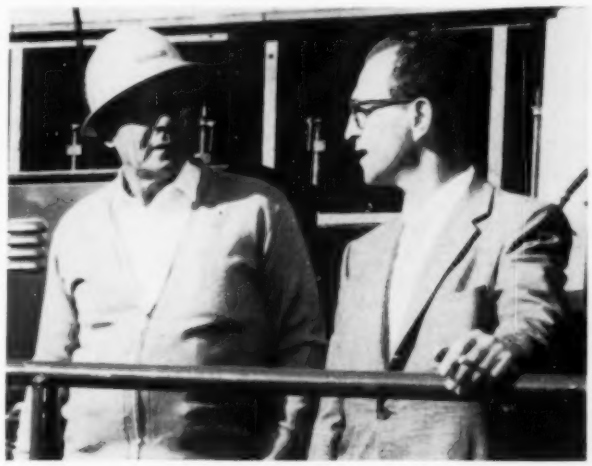
High-Rise Buildings

And the same cost reductions in labor which the Swiss, Germans, French and Belgians have brought about are beginning to be duplicated in southern California.

Up to now, Westwood was a low-silhoutte college town, nestling amid blue-green mountain foothills close to the University of California at Los Angeles. Low Mediterranean and Moorish architecture splashed its contrast against the hills. Park Westwood Towers and other new buildings will change this.

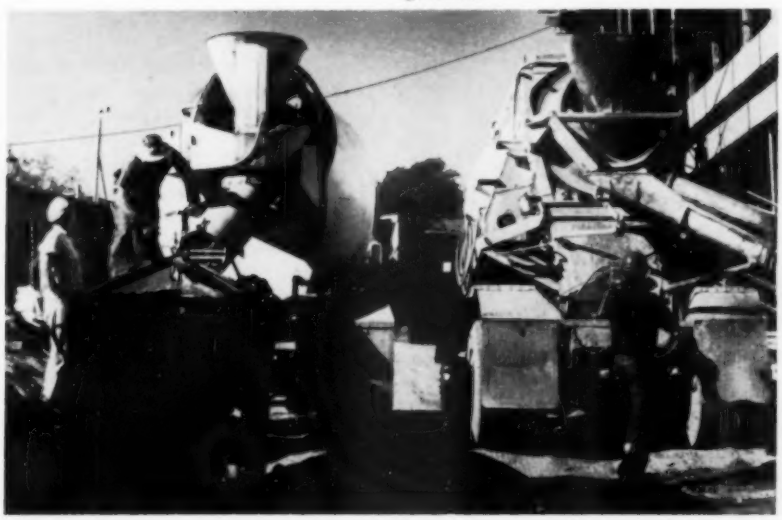
There's a major skyscraper complex being erected near the heart of Westwood. Within half a mile of the downtown section, six other high-rise buildings are under way.

Several features about Park Westwood Towers are unique to southern California. It's the first FHA-approved, Section 207, high-rise building in the Los Angeles area to receive standard bank financing. Residents who live in its 144 single and double-bedroom apartments will enjoy as beautiful, comfortable and safe an accommodation as there is in Los Angeles. This is drawing advance rentals before the building is finished, because many retired oldsters like the safety features, fireproof construction and closeness to their neighbors.



General Superintendent Jack Yoachim *(left)* and Contractor C. R. Moss figure that use of the tower crane and rented concrete forms will cut four months off the building's construction time.

To speed things up, truck mixers are parked two at a time; while one concrete bucket is hoisted by the crane, another is filled on the ground.



Each apartment will be finished with painted walls. Floors are finished concrete. Tenants will take care of their own choice of carpeting. Each apartment will have all-electric utilities. Reverse-cycle heat pumps are to be used for heating and air conditioning. Westinghouse ranges, stoves and dishwashers have been standardized upon throughout the building.

There will be 232,000 square feet of finished floors; 40,000 square feet of garage parking space in three levels. Six miles of water and waste pipe must be installed. Electric conduit totals 12 miles in length. Windows

(Left) Workmen drop 1½-yd. batch of lightweight concrete from Gar-Bro bucket for a deck pour. Tower crane hoisted loads like this at 260 fpm. *(Above)* Finishing keeps pace with rapid 65-cy/h pouring pace.

contain more than 1½ acres of plate glass. The master TV antenna and booster is a $17,000 installation.

When Moss moved in to get Park Westwood started, a block of about 28,000 cubic yards of sandy dirt covered the area where the first spread footings had to be built. It was important to get the dirt out in a hurry, because no concrete construction was possible until it was out of the way. The digging job was tricky, too. Property already built faced the job on two sides. The working area was small.

After considering whether to sub the work or rent equipment and do the job itself, Moss subcontracted the dirt to Montank & Son of Los Angeles, an earthmoving outfit with a lot of experience. It was the best answer to low cost and speedy performance.

Montank low-bedded a Northwest model 25 dragline to the site to scoop out the main block of excavation. A Cat D8 with Traxcavator loader moved in to get the corners, other hard to get at spots, and to excavate under support struts. Fourteen dump trucks of various makes were used on the haul. Water-level loading prevented dirt spillage as the material moved from the building site to a nearby freeway under construction, where it was used for subgrade fill. So rapidly was the work done that 17 days after setting the Northwest dragline in, the excavation was finished.

Drive Piling

Sides of the excavation next to buildings are being protected from caving by a series of driven 14-in. WF-30 soldier piles on 8-ft. centers. These were driven to a point 10 feet below bottom grade. Timber 12x12's were used for struts, reaching from the middle of each soldier pile to a deadman anchored in the foundation soil below bottom grade. By digging out the center first, it was possible to set the soldier piles and struts before making the final excavation passes next to the bank sides.

When building contractors see Park Westwood, one of the things which captures their interest is the modern prefabbed forming system which is saving time and congestion. From the time the first concrete work went in, Moss and his general superintendent have frowned on traditional but costly form-building methods. They wouldn't think of trying to build their own tower crane, for example. So why should they build forms with costly labor methods?

Actually, the only job-built forms which will be used at all are those for columns and shear walls, and they represent only 5% of the total contact forming area.

The company even turned to prefabbed forms for the sides of spread footings, and for basement walls. These spots, which are below ground level, employed Symons Steel-Ply prefabbed panels in 2x8-ft. sizes. They saved erection time, reduced congestion and were easy to strip.

Flat decks, however, highlight the real cost saving in forming. They represent the big majority of square footage. Real speed can be made here, and there's a good opportunity to prove why 57 men are doing what it

normally takes 75 men to accomplish. The only area not actually covered by the building is a small one facing Hilgard Avenue, where a swimming pool will be built after the building is finished. There's no room for a carpenter yard there. But trucks can get in and out easily, delivering the type of modern forms which were built far away, in a factory.

General Super Jack Yocham chose the Acrow patented forming system, and ordered 27,500 square feet on a rental basis. The system consists of high-grade plywood facing on steel frames, in various sizes, to form the concrete surface. These rest in turn on steel joists, which have pinned connections for catching the forms automatically as fast as a man can lay the panels down. The joists in turn are supported on pinned connections carried by Acrow adjustable steel shores. Acrow shoring also is being used, with special connectors, for sway bracing.

"Look at this falsework and you'll see it's braced quite heavy," Yocham explained. It's important. Sometimes it's life or death important. Too many patented shoring jobs have buckled up and failed recently—a few around Los Angeles. You never have trouble when you don't take chances with sway bracing, or overload the safe rated capacity of your shores."

Cost reductions made possible here typify many inherent advantages of prefabbed forms of all makes. Because the forms can be built on a factory assembly line, where carpenters don't have to lose time moving around for materials, their intial cost is low. They were available for this job on a desirable rental basis, which gives a superintendent a far more accurate cost index than any system of job building forms.

Men can handle the sections easily, which enhances safety by reducing injuries and nail punctures. The forms strip fast. They can also be stripped independently of the joists, leaving the latter in place to support the concrete slabs until they get their strength. Stacked, the panels take very little storage room, even for a sizable square footage of the stuff.

Speeds Pours

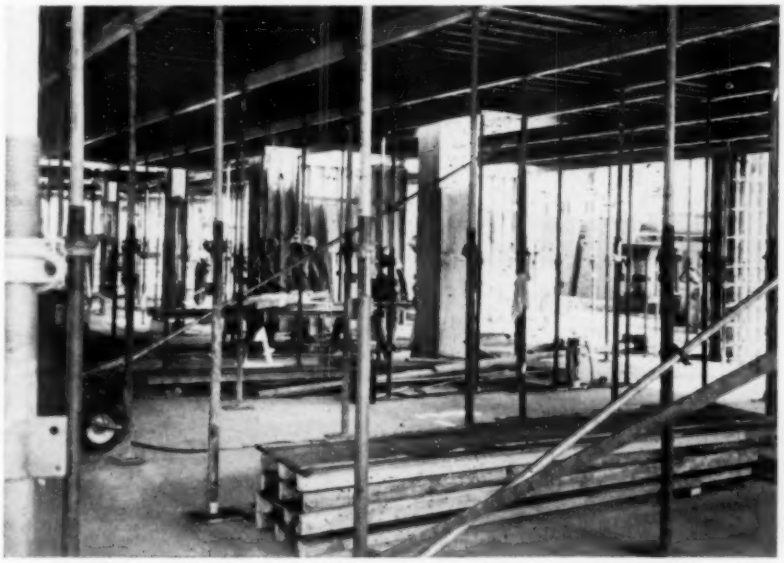
What superintendents fear, of course, is that if for some reason construction speed is slowed down, form rental costs can skyrocket their overall concrete prices. Yocham has stymied that possibility partly by bringing in the new tower crane to increase pouring speed. And much of the credit is due to his own good sense of organizing a job. He makes certain that concrete deliveries are on a dependable schedule. Men have orders to dump a bucketload of concrete in a hurry; not keep it swinging. Truck mixers are double spotted. There are extra concrete transfer buckets. Yocham has dared to use 1½-yd. buckets when his contemporaries still use the conventional 1-yd. size.

So, despite the size of this building, Yocham gets a floor finished every 10 working days. By getting three uses of the rented forms every 30 working days, it makes a reduction in rental cost which equals or betters buying his own plywood.

Side forms for the shear walls will be re-used until Park Westwood Towers is finally topped out. Built with safety scaffolds already in place, they come in pieces up to 11x23 feet in size. When a wall form is stripped, the piece is hoisted by crane to the next level. During the early stages, the job was handled by a 30-B Transit crane. Now it's being done by the Mark I-50 tower machine.

Concrete placing methods are simple and direct. During the lower building phase, before the tower crane was shipped and assembled, the lower concrete was placed by a 45-ton 30-B Transit crane. It was rented to the job by Crook Co., of Los Angeles. About 3,500 cubic yards of regular concrete (3,000-psi/28-day strength) and 6,500 cubic yards of lightweight (3,750-psi/28-day strength) are being placed on a job that's completely independent of buggies, walkways and runways.

Concrete is being supplied by Blue Diamond Corp. of Los Angeles, hauling from a commercial plant only a short run from the job. Truck mixers dump to 1½-yd. Gar-Bro transfer buckets, and two trucks are unloaded at a time. When there's room



Acrow V-forming system was used to save carpenter labor and a cluttered-up carpenter yard. Concrete Tie & Anchor Co. supplied 31,000 square feet of V-form concrete panels; 7,450 lineal feet of I-beams; and all vertical shoring.

upstairs to get rid of the material, a 6-yd. truckload can be placed in 4 to 5 minutes. Chicago Pneumatic high-cycle vibrators are used to consolidate the material. Electric power from special Kohler generators supply these machines. Even the surface finishing is largely mechanized, as men use Whiteman power machines to get the final finish.

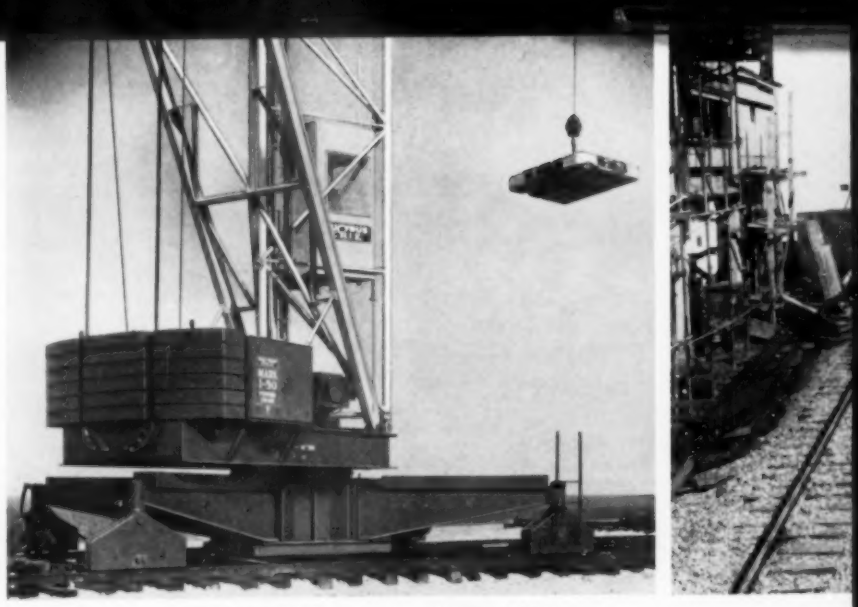
Following a testing period on the Bucyrus-Erie proving grounds near South Milwaukee, the new Mark I-50 tower crane arrived in Los Angeles in the middle of November. It was shipped by railroad, disassembled, and the cars were spotted on a siding at the Belyea Trucking Co. yard in Vernon, a southern suburb of the city.

When word was received that the crane was on its way, Crook Co. arranged to have the first section built of a broad 16-ft. gauge railroad track, which carries the I-50. This gave a permanent spot on which to erect the machine, and still preserved working space for concrete placing by the Transit crane while the tower was being erected.

A rigging crew from Belyea Trucking Co. put the machine togther in 3½ days, and then estimated it could do the job the next time in two days. The 12½-ton base with its bogey arms folded in arrived first. The 30-B crane quickly hoisted it off the truck bed and placed it on the rails. Following in quick succession came the upper works, some 50,000 pounds of special interlocking cast iron counterweights, and the triangular airplane-tubing tower section and boom. The latter were put together on the ground, and cables were reeved. When the rigging job had been finished, an electric motor driven hoist drum on the tower crane raised tower and boom to working position.

On its very first pour, the crane exceeded its rated capacity by placing 65 cubic yards per hour on a third-story deck pour. This involved a 65-ft. lift, and a cycle swing of about 90° from the ground point where concrete buckets were picked up. Also, in the first week's operation, Superintendent Yocham placed some column concrete 128 feet from the center line of the crane. This was done by booming out over a radius of 123 feet, which the crane can reach, and then using a "suck" line to swing the concrete the remaining 5 feet.

The slim, triangular tower and boom sections were built after much research, from alloy steel airplane tubing, fabricated into the distinctive triangular cross section. The combination of triangular design with tubular members results in best load carrying ability and reach, with a minimum of deadweight and wind resistance.



Tower crane is mounted on 16-ft. gauge track, providing a 16-ft. by 22-ft. base. Propel motors and brakes are mounted on two rail bogies.

The tower is made up of one top section 31 feet long and four identical 30-ft. body sections. Boom foot and boom point pieces are 30-ft. long, and 10, 20, and 30-ft. boom inserts are provided. Thus, if he wishes, Moss can combine boom lengths to make anywhere from 60 to 120 feet, or decrease the tower height if desired. And the whole tower and boom works are so delicately mounted on a huge ball bearing that the machine will "weathervane" in windstorms.

Good Vision

From the standpoint of the concrete foreman, placement of the control cab offers distinct advantages. The operator can always work at eye level, simply by moving his cab up or down to any of five control points. By being able to see for himself, the operator can spot loads with uncanny precision. Optional remote control is also available in case the job calls for control from the work site.

All told, the new crane is an important cost cutting breakthrough in building construction. According to Moss, it's already easy to visualize how the machine's use can be extended to freeway bridges, docks and wharves, dams and other such structures.

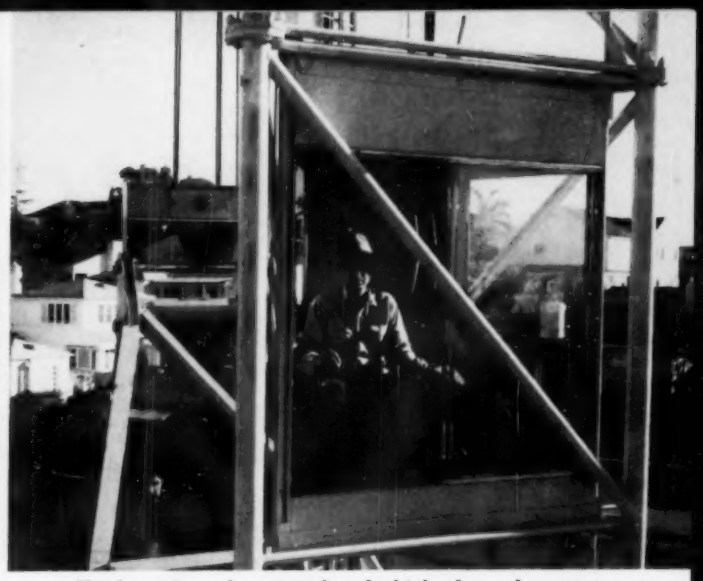
Design

THIS is the most thoroughly researched crane ever designed anywhere," said George Reuter of Bucyrus-Erie's engineering department one day to Superintendent Jack Yocham of Moss Construction Co. Behind Reuter's remark were months of field study in the United States and in Europe, months of design and engineering conferences at South Milwaukee, and more months of testing on the proving ground.

The extensive research behind the I-50 contrasts somewhat with its simplicity of purpose. It was designed to do one job better than anything had ever done the job before. It would cut drastically the cost of pouring concrete, erecting steel, and handling all kinds of materials. It would do all this faster and with a higher degree of precision than before possible.

The wizardry of modern electronics came into play when a Bendix computer was used for the first time in Bucyrus-Erie's history to check out the entire design of a new machine. The computer was used to calculate and check in minutes, formulas which formerly took teams of engineers weeks or months to do. Certain formulas on

Using pneumatic tampers, workmen compact ballast material placed around track ties laid along one side of the hemmed-in building site.



Head-on view of operator's cab, high above the street, shows picture-window visibility through large sliding front window and sides. Windows are safety-glass and are removable.

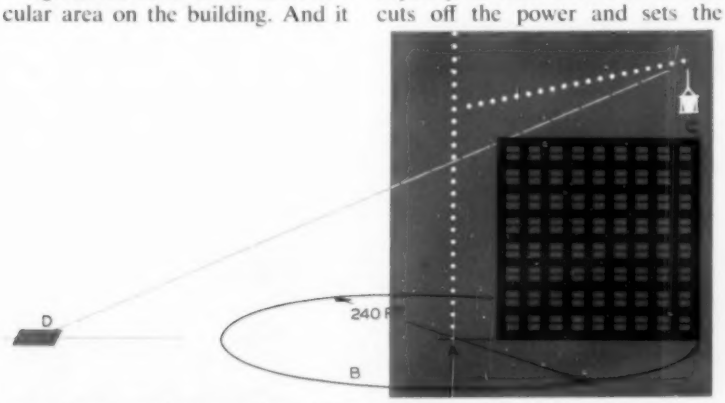
Backed By Research

stresses, behavior under load, and aerodynamic behavior were worked out and checked for every possible working condition.

Result—a machine with an entirely new configuration. It's stately, slender and graceful, yet sturdy. It gives its owner the vertical-lift feature of a construction elevator tower, combines it with the reach of a crawler crane, and adds advantages which neither can match.

It can pick up a load from any point in a 246-ft. circle, and deliver it high in the air over the same circular area on the building. And it can do this job without having to back off so its boom will clear, as conventional crawler cranes have to do. What's more, there's no need to rehandle material, because it's all done swiftly in one motion. The Mark I-50 can service almost any shape or size building. Park Westwood is ideal for its design.

The machine is one of the safest ever devised, because a fail-safe load sensing device tells the operator when the weight or radius of load approaches maximum crane capacity. A load limit control then cuts off the power and sets the brakes before safe limits are exceeded. If the power should fail, brakes snap on automatically, stopping all further movement of the machine. And there are limit switches which cut power and set brakes if the operator should raise the boom too high, or lower it too low. The same devices will automatically prevent a load from being drawn through the boom-point sheave, and shut off the propel motors when the machine approaches the end of its rail track.



Tower Crane, standing at point "A," can pick up a load from any spot within the 246-ft. diameter circle "B," and deliver it to point "C" or anywhere else along the length and breadth of the structure. There is no need to back off to point "D" as with a conventional crawler crane.

Shows Stability

In proving-ground tests, the new crane proved its ability to negotiate S curves with a radius of only 11 feet.

The crane is unusually stable. On the Park Westwood job it's handling 1½-yd. concrete buckets, for example, instead of the conventional 1-yd. loads. This is made possible in large part by the new Ward Leonard DC hoist which combines line pull and line speed automatically to make best use of available horsepower. Cast iron counterweights instead of gravel ballast are another improvement. There's no dust hazard to electrical elements, nor will excessive rain ever change the balance. Interlocking cast iron sections, the largest weighing only 2,500 pounds, simply lower into place in minutes.

NEWS FROM THE FIELD

Coal Show Set For May 15-18

Mining men from every coal producing area of the nation and from many foreign countries will attend the 1961 Coal Convention and Exposition of the American Mining Congress in Cleveland, Ohio, May 15-18.

Better known as the AMC "Coal Show," the Convention-Exposition's participants will hear government officials speak on fuel policy. Other speakers will review technical progress being made in the industry and means of further improving production methods and increasing efficiency and safety in coal mining.

An industry-wide committee, headed by F. Stillman Elfred, chairman of the board, Peabody Coal Co., St. Louis, Mo., has completed work on a program for the meeting.

In addition to the convention sessions, manufacturers of mining machinery will display practically every item used in modern coal mining in the concurrent exposition.

Letter to the Editor

Litherland & Hughes
Dozer Service
Allendale, Ill.
March 3, 1961

Dear Sirs,

I would like to thank you for sending the *Excavating Engineer* regularly. It is very interesting and informative.

Dale Hughes, son of contractor Tom Hughes, Allendale, Illinois curls up in a rocking chair after reading a copy of his favorite magazine.

My two small sons also "read" it from cover to cover. I am enclosing a snap shot of the youngest who regularly falls asleep with his favorite magazine.

Sincerely,
Tom Hughes

Army Testing New IH Earthmover-Carrier

A crawler tractor, that's a dozer, scraper, dump truck, grader, cargo and personnel carrier and a high speed prime mover, is currently under test by International Harvester's construction equipment engineers and by the U. S. Army Research and Development Laboratories (ERDL), Ft. Belvoir, Va. In addition to its varied capabilities as an earthmover and carrier, the unorthodox vehicle, called the UET (for Universal Engineer Tractor), is also designed to operate with such allied equipment as crane booms, conveyor belts, winches and earth augers.

While many of its functions are essentially land operations, the experimental tractor represents a radical departure from the earthbound machines it would replace. The tractor has been designed to travel by air and to be dropped (by six 100-ft. parachutes) at the scene of action. At home in water, too, the UET's crawler tracks will propel it across rivers and lakes at a speed of 4 mph. It is also built for deep fording and for working and towing in water to a depth of more than six feet.

To make the UET crawler light enough (20,000 pounds) to be airborne, the first prototype now under test is 35 to 40% aluminum. The only significant pieces of steel in the entire hull are the dozer and scraper cutting edges. The UET is able to load itself with earth (or other locally available ballast), making it possible to double the airborne weight and

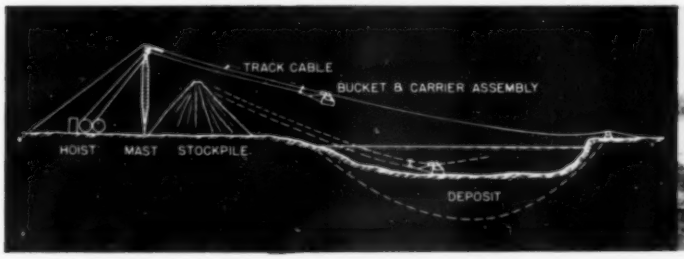
Continued on page 44

(Left) **As scraper, Universal Engineer Tractor (UET) has heaped capacity of 8.5 cubic yards. Earth is ejected by forward push of gate.** ***(Right)*** **Ramps over tracks permit digging a full 110-in. scraper cut. Top of ramps serve as seats to carry 12 men.**

FROM PIT TO STOCKPILE...

Dig and Haul at Lowest Cost with a Sauerman Slackline

DIGS AND HAULS—New Sauerman Slackliner Bucket is especially designed for tough digging. It inhauls at high speed, dumps automatically, and returns to digging point by gravity.



STOCKPILES MATERIAL—Regardless of long hauls, the Slackline builds a large surge pile to allow charging the plant at any desired rate. Plenty of material is in ready reserve for seasonal or unexpected increases in schedule.

Operating costs as low as 8¢ per yd. for labor, power and maintenance are reported by Slackline Cableway owners when digging free-caving material at average depth and haul distances.

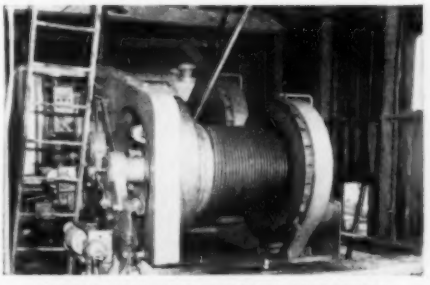
These low costs are achieved by using just one machine—the new Sauerman Slackline Cableway. Multiple equipment is not needed to supply your required tonnage. For example, on an average haul and digging depth, a single medium size machine will charge a 200 tph. plant.

The high Slackline mast permits building a large pile which can supply plant demands through a plate feeder and tunnel conveyor, front-end loader or clamshell. The new Sauerman torque converter diesel-hoist automatically matches power to load demands and is designed for continuous duty. Fluid drive cushions out shock loads to reduce fuel and maintenance costs, extend cable life.

Increasing land values and depleting resources make it necessary to get all the material out of your deposit. You can do this with a Sauerman Slackline. The machine will dig from ground level to deep under water and keep your plant running additional years at the lowest possible operating cost. Several pits are now operating Slacklines on 1000-ft. spans with average hauls of 500 to 700 ft. and from 100-ft. depths.

Write or call, giving your tonnage requirements, depth and length of deposit—if available. We will promptly supply more information on Slackline Cableways, and show you how to *save with a Sauerman.*

CONTROL IS REMOTE, EFFICIENT AND SAFE—Control station can be conveniently located at any strategic point in plant area. Operator can watch entire operation. Fatigue is minimized and personal danger eliminated.



TORQUE CONVERTER INCREASES PRODUCTION, CUTS MAINTENANCE—Now available, the new Sauerman Torque Converter Hoist automatically matches power to load, provides a smooth and steady flow of material, reduces fuel, maintenance and cable costs.

SAUERMAN BROS., INC. 622 SO. 28th AVE. BELLWOOD, ILL.

Linden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

Prevent!
DYNAMITE BLAST VIBRATION
• DAMAGE
• COMPLAINTS, DELAYS
• UNJUST LAW SUITS, LOSSES
with your own
BLASTCORDER
• Designed especially for dynamiters.
• Even a layman can understand the vibration reading on the meter. Meter helps blaster keep shots safe. Makes impressive demonstration indoors and outdoors to maintain good community relations.
• Pushing 2 buttons makes an immediate 4 x 5 record scaled like the meter — no photo processing, no delays, no computations. Helps satisfy complaints on the spot and prevent law suits. Invaluable permanent record for evidence.
• Rugged for field use. Weighs 20 pounds with batteries. Dimensions: 6 x 12 x 19 inches.
• Price: 1-component model $1225; 3-component model $1800. Records 30 cents each.
GEOTECH
The Geotechnical Corporation
3401 Shiloh Road, Garland, Texas
Phone BR 8-8102

News . . .

Continued from page 42

providing a maximum drawbar pull of 17½ tons—equivalent to that of a conventional tractor of twice the UET's empty weight.

The suspension system allows the tractor literally to raise and lower itself "by its own bootstraps." Thus, the operator can nose it down into the earth (by raising the front wheels) for scraping and dozing and raise it again to travel height (by lowering the wheels).

A front loader, the UET lifts a hydraulically controlled apron to open up its ballast compartment or bowl. Working to an airborne width limitation of 110 inches, IH engineers solved another key problem by designing an interior bowl configuration that permits a full 110-in. scraper cut. They did it with ramps over the crawler tracks which also make it possible to utilize the full width of the vehicle, above the tracks, for ballast or cargo space. Earth capacity of the bowl is 7.4 cubic yards struck, 8.5 cubic yards heaped. The horizontal parts of the ramps also serve as seats when the UET functions as a personnel carrier. It can transport a dozen men with equipment.

The first UET prototype is powered by a 250 hp (at 3,000 rpm), V-eight, liquid-cooled gasoline engine. Engine and controls are in the rear where the operator has an unobstructed forward view of the bowl during scrape-loading operations. A power-shift, planetary transmission provides four forward and two reverse speeds. The tractor is 220 inches in length and can pivot-turn 180° in a space 23 feet wide. Due to a low center of gravity and unusual stability, it can operate ascending, descending or side-slope on grades of at least 60%. Nine feet high to the top of the windshield, the UET can "squat" (lower its bowl) and fold its windshield down, reducing height by 28 inches. Some military men estimate that the UET could replace 119 makes and models of specialized, conventional equipment now used by the Corps. This, in turn, would dramatically reduce the number of different spare parts required for field operations from 161,160 to 2,040!

At the same time, the Army Engineers estimate production capabilities of the UET at 1½ to 4 times as great as basic earthmovers now in use. For example, they estimate that a fleet of six UET crawlers could handle 2,000 cubic yards of earth over a 2,000-ft. hauling distance in 4 hours. For the same job, six tractor-loader combinations in the present equipment line would require 10½ hours.

Contractor Gets Sleek Copter

Geo. M. Brewster & Son, Inc., of Bogota, N. J., is the nation's first construction company to purchase a new Hiller E4 four-place "station wagon" helicopter.

Brewster will put the helicopter to work primarily in executive transport work, in connection with the company's widely dispersed heavy construction projects.

The Hiller E4, powered by a 305-hp engine, was fitted with a deluxe interior and a new electronic loudspeaker system for communications with ground personnel from altitudes to 1,000 feet.

Brewster pilot Dan Rosenson took delivery of the aircraft at the Hiller plant in Palo Alto, Calif., and then flew it across the nation to New Jersey.

Brewster specializes in heavy construction. Notable among its projects have been the Teterboro airport, Lincoln Tunnel and George Washington Bridge approaches, and major portions of the N. J. Turnpike and the Garden State Parkway. Brewster is now active in the Chico dam project in California.

The Hiller E4, first models of which are now coming off the production line, is the highest powered four-place helicopter available and the only aircraft in its class which can climb vertically when fully loaded.

A four-place Hiller E4 "station wagon" helicopter was recently delivered to Geo. M. Brewster & Son, Inc., construction firm of Bogota, N. J. Shown here with the new aircraft is Brewster pilot Dan Rosenon.

H&L *Teeth that really dig!*

IT'S HERE!

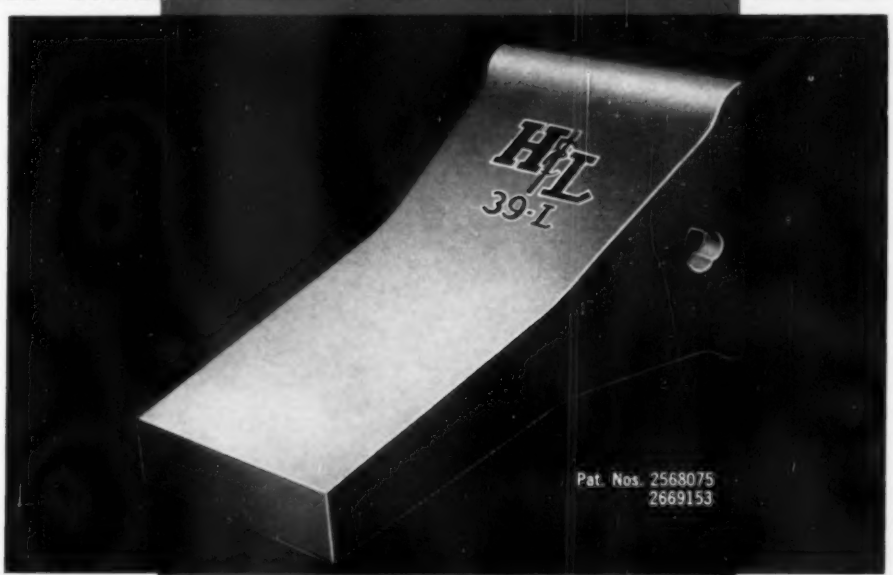
THE POINT YOU'VE HEARD SO MUCH ABOUT

THE ONE PIECE FORGED

TACONITE

POINT

NOW AVAILABLE FOR IMMEDIATE DELIVERY



HAMMER FORGED HIGH ALLOY SUPER STEEL

WITH CONSTANT HARDNESS FROM CORE THROUGHOUT POINT

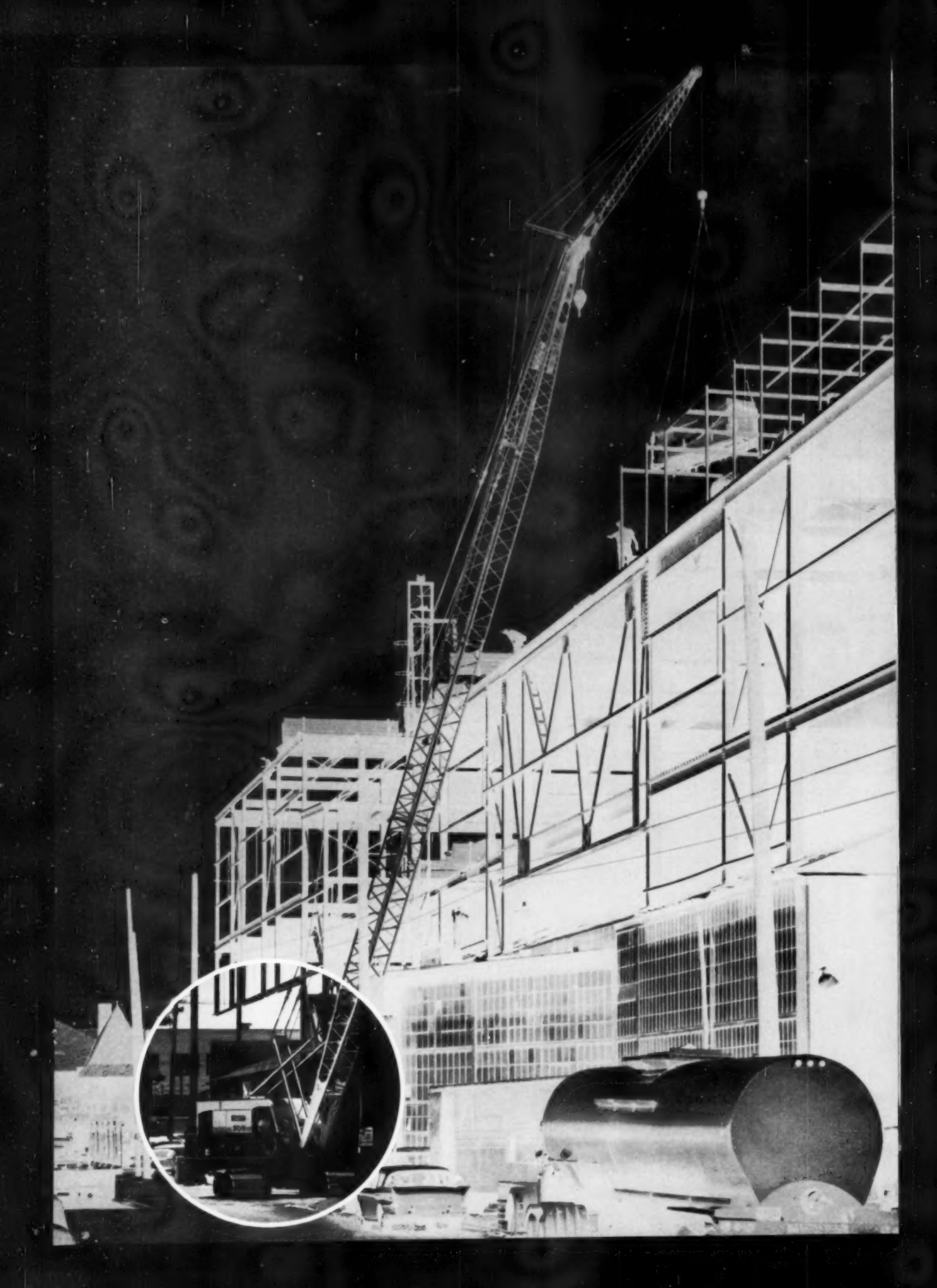
WEARS AND WEARS
IT'S *REVERSIBLE* TOO!

H&L

SEE YOUR H&L DEALER

TOOTH COMPANY
1540 SOUTH GREENWOOD AVENUE
MONTEBELLO, CALIFORNIA

SPECIALISTS SPECIALIZING IN THE MANUFACTURE OF BETTER DIGGING POINTS FOR OVER 30 YEARS



SUPERcranes are here! Throw away the old yardsticks on crane buying because the 1961 **SUPERcranes** from Bucyrus-Erie will change all that! **SUPERcranes** mean more tonnage-lifting capacity per dollar invested. Tell us how much you want to lift and we'll tell you how much you can save...with a **SUPERcrane!** See your nearest distributor, or write Bucyrus-Erie Company, South Milwaukee, Wisconsin. BUCYRUS ERIE®

1E61

Bethlehem wire rope supplies muscle for deepening Buffalo's harbor

Rigged entirely with Bethlehem wire rope, this 12 cu yd clamshell dredge is deepening the channel in Buffalo Harbor to facilitate the navigation of ships using the St. Lawrence Seaway. Operated by Great Lakes Dredge & Dock Company, the dredge is shown hard at work off the Niagara Frontier Port Authority Terminal.

The harbor improvement program is being undertaken in four stages at a cost of about $10 million. The work is due for completion in 1961.

The dredge operators are getting dependable performance from their Bethlehem wire rope. Whatever your construction work may be, you too, can rely on this fine rope for the really tough jobs.

Wire rope mill depots and distributors from coast to coast stock Bethlehem rope

NEW CATALOG... "Bethlehem Wire Rope for Construction and Industrial Equipment" is a valuable reference of specific recommendations for the use of wire rope on bulldozers, shovels, derricks, cranes, and other equipment. Its 150 pages include data on grades, cores, and lays of wire rope, fittings, etc. Write today for your free copy. Ask for Catalog 493. Address your letter to Publications Dept., Bethlehem Steel Co., Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

Why hard and soft SPI-RAL rods?

Suppose you want a rod with the extra hardness, wear-resistance and long life of tough carburized alloy steel, and don't want to consider reconditioning; then the Ingersoll-Rand 1¼" hex SPI-RAL rod is for you.

On the other hand if you want the extra economy of a rod that can be reconditioned good-as-new, and used over and over again, then you want the non-carburized Ingersoll-Rand 1½" round SPI-RAL rods. They are made of a special grade alloy steel, pretreated to make it the hardest workable steel available.

Ask your Ingersoll-Rand man about these two fast-lead rods for your CRAWL-IR jobs today.

CARBURIZED

RECONDITIONABLE

Ingersoll-Rand

226A5 11 Broadway, New York 4, N. Y.

A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK

FOR 50 YEARS...
Finest in the Field!
Rely on the bucket contractors rely on. The Omaha Dragline Bucket gives full load with every cast. Perfect balance makes it easy to spot dump. Alloy steel cutting teeth stay sharp, tough and ready. Strike pay dirt now! Complete information and specifications await your letter.
DRAKE-WILLIAMS MOUNT
• OMAHA, NEBR.
OMAHA
DRAGLINE BUCKETS

NEW Trade Literature

Subject: **Petroleum Products**

Content: A booklet *Sunoco Petroleum Products for Automotive and Off-The-Road Equipment* gives descriptions and suggested applications for the Sun line of diesel and gasoline motor oils, gear lubricants, transmission fluids and greases.

Where to get: Sun Oil Co., Industrial Products, Department EE, 1608 Walnut St., Philadelphia 3, Pa.

Subject: **7-Strand Wire Rope**

Content: A 4-page bulletin describes and lists typical uses for Macwhyte's new "7-FLEX" 7-strand wire rope. The basic difference between this new wire rope and all other ropes is that it is made of 7 strands plus an independent wire rope core instead of conventional 6 strands or 8 strands in general use today. It was designed and is manufactured only by Macwhyte. Sizes manufactured are ½ to 1⅛ inches, inclusive, ranging in strength from 13.1 tons to 64.2 tons. The new rope comes closer to being a universal, all-purpose rope than any on the market today, the bulletin says. Patents have been applied for. Ask for bulletin 6010R.

Where to get: Macwhyte Wire Rope Co., Department EE, Kenosha, Wis.

Subject: **Mobile Crane-Excavators**

Content: A new revised 12-page specification bulletin covers the series 350 Bantam crane-excavators. Included are complete capacity charts, work ranges of the 11-ton carrier-mounted model T-350, the 11-ton self-propelled model CR-350 and the 8-ton model C-350 crawler-mounted Bantam, as well as the complete line of front-end attachments. Ask for No. 350-2.

Where to get: Schield Bantam, Co., Department EE, Waverly, Iowa.

Subject: **Cat 922 Traxcavator**

Content: Design features of the Caterpillar 922 Series A Traxcavator are detailed in a 12-page booklet. Engineering details which assure quick response performance, operator safety and convenience and greater ease of servicing are described. Ask for booklet 34004.

Where to get: Caterpillar dealers or Caterpillar Tractor Co., Department EE, Peoria, Ill.

Subject: **Slackline Cableways**

Content: A 20-page Sauerman catalog shows how deep digging slackline cableways are used to recover sand and gravel deposits; clean river channels and settling ponds; excavate and haul bulk materials. A table shows capacities of each size machine at varying haul distances. Components of the slackline are described in detail. Pictures and drawings cover a variety of installations. Ask for catalog C.

Where to get: Sauerman Bros., Inc., Department EE, 622 S. 28th Ave., Bellwood, Ill.

Subject: **Skooper Excavator**

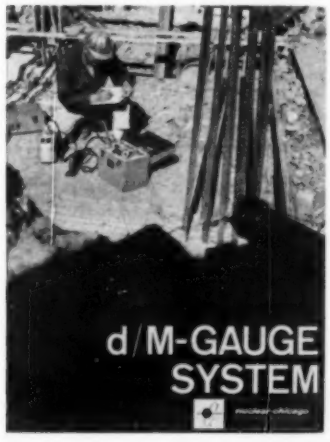
Content: Time-exposure photographs of a Skooper with a light bulb attached to its bucket, and a rubber-tired front-end loader similarly equipped show graphic evidence of the Skooper's standstill loading

advantages in a new mailer released by Koehring. The mailing piece illustrates and describes how the Skooper stands still while loading. Result: big loading tonnages using less horsepower, with less maintenance. Ask for *A Light River Story*.

here to get: Koehring Div., Koehring Co., Department EE, 3026 W. Concordia, Milwaukee 16, Wis.

bject: **Nuclear Soil Testing**

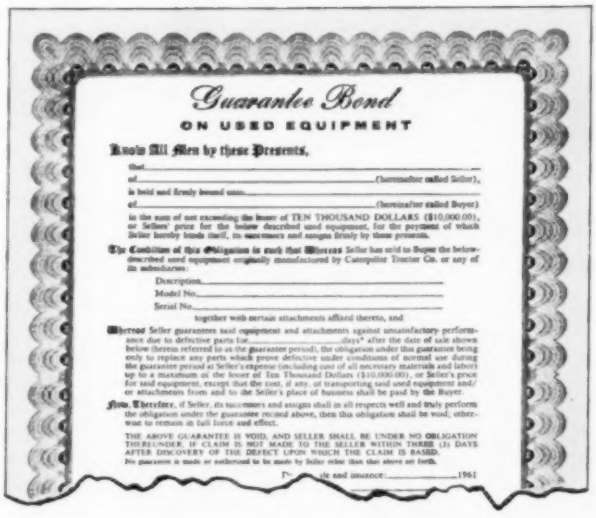
ntent: A 6-page brochure, available from Nuclear-Chicago Corp., describes how to use nuclear gauges for rapid field determination of moisture and density in soils, aggregates, concrete, asphalt and other materials. The nuclear moisture and density probes may be used on the surface of the material being tested or may be inserted into bore holes through access tubing to measure the moisture or density at selected depths to 200 feet below the surface. The illustrated brochure shows the nuclear probes in use in the following determinations and measurements: soil stability, air field runway subsurface evaluation, borrow pit evaluation, sub-surface building foundation studies, testing of concrete, pavement failure studies, in-



place measurements of density of concrete and asphalt, compaction control of fills, evaluation of tilting and settling of floors, footings, and foundations, and moisture and density measurements of fills and backfills.

ere to get: Nuclear-Chicago Corp., Department EE, 359 E. Howard Ave., Des Plaines, Ill.

This Bond Is an Investment in You



Guarantee Bond

ON USED EQUIPMENT

Know All Men by these Presents,

That _____

of _____ (hereinafter called Seller),

is held and firmly bound unto _____

of _____ (hereinafter called Buyer)

in the sum of not exceeding the lesser of TEN THOUSAND DOLLARS ($10,000.00), or Seller's price for the below described used equipment, for the payment of which Seller hereby binds itself, its successors and assigns firmly by these presents.

The Condition of this Obligation is such that Whereas Seller has sold to Buyer the below-described used equipment originally manufactured by Caterpillar Tractor Co. or any of its subsidiaries:

Description _____

Model No. _____

Serial No. _____

together with certain attachments affixed thereto, and

Whereas Seller guarantees said equipment and attachments against unsatisfactory performance due to defective parts for _____ days* after the date of sale shown below thereon referred to as the guarantee period), the obligation under this guarantee being only to replace any parts which prove defective under conditions of normal use during the guarantee period at Seller's expense (including cost of all necessary materials and labor) up to a maximum of the lesser of Ten Thousand Dollars ($10,000.00), or Seller's price for said equipment, except that the cost, if any, of transporting said used equipment and/or attachments from and to the Seller's place of business shall be paid by the Buyer.

Now, Therefore, if Seller, its successors and assigns shall in all respects well and truly perform the obligation under the guarantee recited above, then this obligation shall be void, otherwise to remain in full force and effect.

THE ABOVE GUARANTEE IS VOID, AND SELLER SHALL BE UNDER NO OBLIGATION THEREUNDER, IF CLAIM IS NOT MADE TO THE SELLER WITHIN THREE (3) DAYS AFTER DISCOVERY OF THE DEFECT UPON WHICH THE CLAIM IS BASED.

No guarantee is made or authorized to be made by Seller other than that above set forth.

Dated and issued _____ 1961

Signed by your Caterpillar Dealer, this bond gives you up to $10,000 worth of machine dependability

BONDED BUY

Bonded Buy means guaranteed machine dependability. You can get a completely-checked, used Cat-built machine that has the Cat Dealer's confidence and guarantee, PLUS this bond from Lumbermens Mutual Casualty Company that backs up your machine with as much as $10,000 worth of parts and labor for the period you and the dealer agree upon.

See your dealer. Read the bond. Check the details. This guarantee can apply on your next used machine. And you pay no extra premium for this assurance. Dependable Bonded-Buy machines are priced right—and your Cat Dealer offers terms to match your needs. Call him or see him soon. Do business with the man whose business is built on dependability.

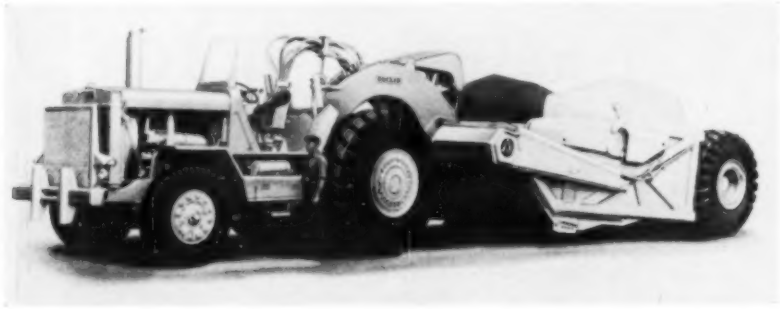
Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

YOU'LL THINK ESCO NO ONE MAKES A TOUGHER TOOTH THAN ESCO NO ONE MAKES A TOUGHER TOOTH THAN ESCO NO ONE MAKES A TO

EQUIPMENT YOU OUGHT TO KNOW ABOUT



40-Yd. Six-Wheel Scraper

Manufacturer: Euclid Div., General Motors Corp., Department EE, Cleveland 17, Ohio.

Claims: The new model SS-40 six-wheeler is Euclid's largest scraper. Payload capacity is 125,000 pounds; struck capacity is 40 cubic yards with an SAE rating (heaped at 1 on 1 slope) of 52 yards.

Designed for high production jobs requiring long hauls at speeds up to 34 mph, the SS-40 is powered by a GM 12-cylinder diesel engine (12V-71) of 432 hp. It is equipped with an Allison Torqmatic drive that has four forward and two reverse speed ranges that provide full power shift.

Converter lock-up for maximum fuel economy and efficient use of engine power is incorporated in the converter-transmission package. Torqmatic brake, a hydraulic speed retarder to control speeds on long downgrade hauls, is standard equipment.

All scraper operations—bowl, apron and ejector—are completely hydraulic with no cable connections. A completely new "Push-out, Roll-out" ejector eliminates the dumping problem which has been a major obstacle in the development of large capacity scrapers in the past.

A radial design, power apron is another innovation incorporated into the SS-40. Because it is designed on a true radius, the apron does not carry a heavy load of dirt, allowing it to raise much easier. Also, hydraulic power closing helps hold on to those last few "hard to dig" yards, particularly important when loading sand and other free flowing materials. The bowl is raised and lowered by a single hydraulic jack.

Width of cut is 11 feet 4 inches—provides good footing for the largest pusher tractors. Cutting edge is made up of four sections that are reversible and interchangeable—these provide a 4-in. maximum drop center adjustment—side cutters are reversible for longer life. Maximum depth of cut is 14 inches.

Front tires are 14.00 x 25; drive tires 33.5 x 33; and scraper tires are 37.5 x 33.

The tractor of the SS-40 can be quickly attached to a Euclid bottom-dump with 40-yd. struck capacity. This interchangeable feature gives maximum job flexibility with minimum equipment investment.

Extendible Trailer

Manufacturer: Rogers Bros. Corp., Department EE, Albion, Pa.

Claims: Rogers Bros. has developed a new model in its extendible high flat line, which will be designated as model HFT25DX. This unit is equipped with 10.00 x 15, 12-ply nylon tires and has a drop deck which produces a 44-in. deck height. Height of the model with 10.00 x 20's is 55 inches.

Advantages of the trailer are:

1. Deck height of 44 inches is 12 inches less than a conventional high flat which allows handling of higher loads without obtaining special hauling permits.
2. Low center of gravity eliminates much of the side sway created by high loads.
3. It has all of the features of the extendible high flat for handling long loads.
4. Can be used in place of low bed trailers on many moves.
5. It features a "foolproof" air operated deck lock.
6. Is available with a choice of rear axle suspensions: spread tandem, sliding tandem or triple-axle tandem.

It will haul bulky, high loads with the deck in closed position of 35 feet and haul long, unwieldy loads with the deck in open position of 45 or 55 feet.

Crawler Tractor

Manufacturer: J. I. Case Co., Department EE, Racine, Wis.

Claims: Case's new model 750 crawler tractor is now on display at dealers. The big machine features a 301-cu. in. Case built diesel engine. It is equipped with the exclusive Terramatic transmission and a "load-sensing" torque converter that produces up to 23,000 pounds push-pull effort. Split second power shifting, effortless power steering and independent power control of each track are also featured in this new machine.

Other features of the 750 crawler include finger-tip pressure hydraulic

controls, self-lubricating lower track rollers, ease accessibility to oil and fuel filters and the electrical system, plus the introduction of a new concept of servicing with simple hand tools. A new hydraulic track adjust-

ment is specifically designed for faster, easier daily maintenance plus top operating efficiency to give the customer more profit time on the job. Specifications on the new tractor are available.

Multi-Stage Utility Pumps

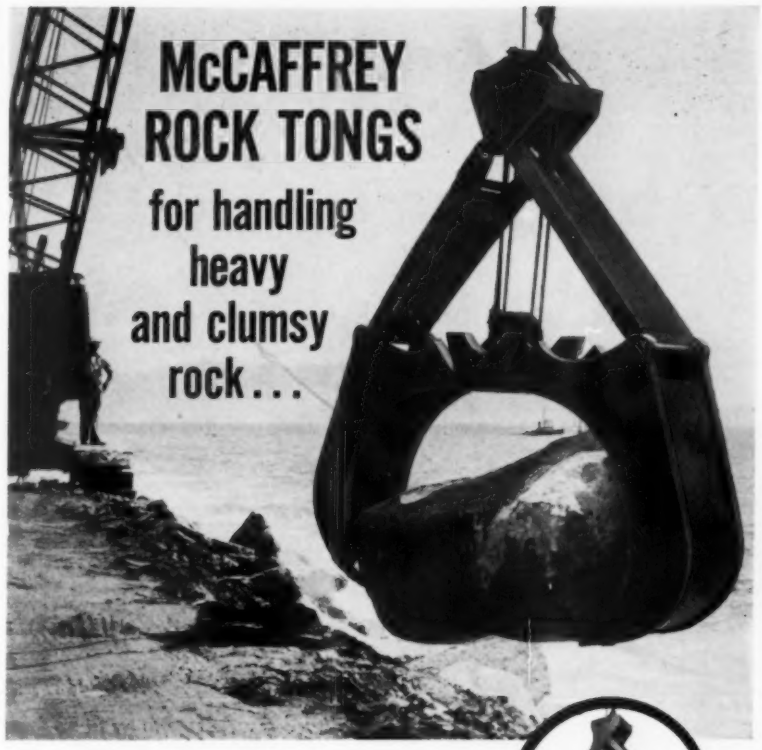
Manufacturer: Barnes Mfg Co., Department EE, Mansfield, Ohio.

Claims: A new improved version of its multi-stage utility pump has been announced by Barnes. The pump is available in both electric and gasoline-powered models. Both models incorporate the Barnes Sabre-Jet design and construction.

Construction of the new pumps make them desirable for general purpose applications requiring high head performance. A large capacity is possible since they deliver up to 3,200 gallons per hour and offer pressure up to 60 psi.

Both pumps have a compact, heavy-duty close-coupled capacitor motor or gasoline engine. Bronze impellers and check valves resist corrosion.

On models 162U and 162UG, the



with *exclusive* double center pin action

Whether extending a breakwater, patching a levee, or working a quarry, dependable McCaffrey Rock Tongs solve the tough problem of moving large rock. Exclusive double center pin action permits each tine to accommodate itself independently around odd shaped rock. Huge granite chunks are tightly gripped and easily handled, eliminating expensive method of hooking up with cable sling. McCaffrey Tongs accurately keystone big caprock gently into position, shown photo right. Available in 10 and 20 ton capacity models. For complete information, write to

M. P. McCAFFREY, INC.

2121 East 25th Street, Los Angeles 58, Calif.

suction is tapped for 1¼-in. pipe and a bronze check valve is supplied with both the gasoline and electric models. The discharge is 1-in. diameter. Hose adaptors for every conceivable use are available in an accessory package from Barnes. The base and check valve are standard equipment.

55-Ton Crawler Crane

Manufacturer: Construction Equipment Div., Baldwin-Lima-Hamilton Corp., Department EE, Lima, Ohio.

Claims: A new Lima high capacity special crane, designated the type 65-SC, has a lifting capacity of 55 tons with 40-ft. boom at 12-ft. radius. The boom can be extended to 180 feet for such work as boosting concrete buckets on multi-story building construction.

Significant features and advantages of the new crane include:

Superior handling. Precision air-operated main and auxiliary controls provide ease of operation and good handling ability.

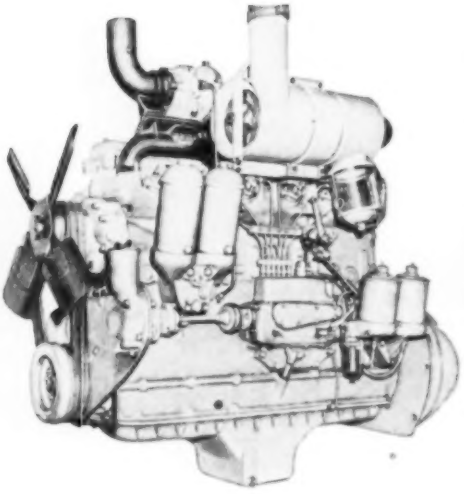
Extra stability. Long, wide crawl-

Continued on page 56

NEW International® TD-

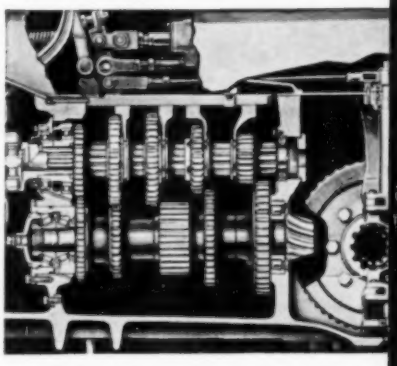
...built to "BEEF UP" your profit edge!

From air intake to new fixed drawbar—from day-to-day dependability through year-in, year-out durability—new strength, new performance protection, new work capacity are built into the new TD-20. Check and compare the advantages of International turbocharged Diesel power, teamed with beefed-to-match new transmission and final drive components—platformed on a far stronger-than-ever undercarriage—turned into new efficiency by International-built tracks, kept in life-prolonging alignment by exclusive International 3-point suspension. See your International Construction Equipment Distributor for a new TD-20 demonstration.



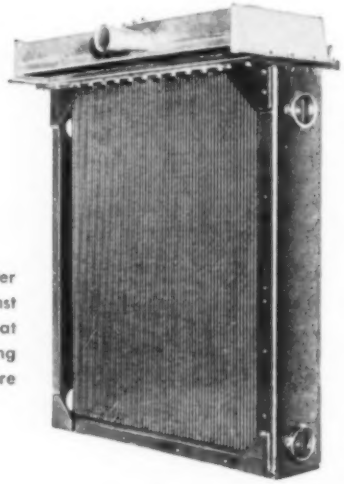
New Turbocharged Diesel Wallop

Modern turbocharging crams air into the new TD-20's smooth running 6-cylinder engine—to produce extra hp efficiently at all altitudes; and to give a 50% torque rise to lug larger overloads. Crankcase ribs are "beefed up;" cooling, air cleaning, and crankshaft capacity all are increased to team with turbocharging. Push-button TD-20 starting is by famous International gasoline-conversion system!



New transmission capacity ...New filtering system added

Heavier shafts, more rugged gears, and roller bearings of greater capacity are provided—to carry increased hp and add thousands of hours to working life of power train components. New transmission oil pump circulates and filters life-guarding lubricant. New "short-travel" levers add operating ease.



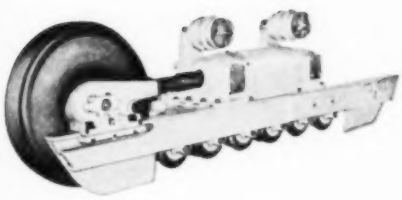
Larger radiator plus jet head increases cooling capacity

Coolant, under pressure from the new greater capacity radiator, is shot through jets against lower surface of TD-20 heads—to aid heat transfer and avoid build-up of heat-trapping deposits. Fan shroud and radiator guard are "heavied" for increased rigidity.

20

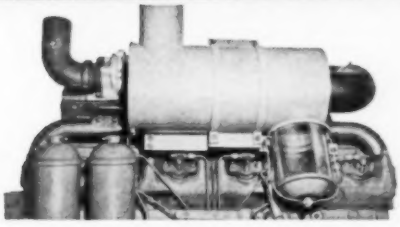
(201 SERIES)

New 140-hp International TD-20 crawler tractor. Develops 113 drawbar hp. Powered by 6-cylinder DT-691 Turbocharged Diesel engine. New capacity 6-speed, full-reverse transmission is controlled by new short-travel gear-shift and Shuttle-Bar levers.



New Undercarriage Strength and Protection

New drum-type front idlers add strength... International also adds track chain guides to both sides of the TD-20's precision-welded double box-beam track frames! New track roller shields are of cast steel. New heavier strutless track links are self-cleaning and power-saving. The new hydraulic track adjuster, with built-in safety relief is "standard" on the new TD-20. And full-floating seals of increased efficiency guard Dura-Roller life!



New 99.8% efficient Dry-Type air cleaner

For positive "breathing" safety, the full air volume taken in by turbocharging is "dry-cleaned" of 99.8% of its dirt—by the TD-20 Diesel's new dry-type air cleaner. Handy, under-hood horizontal mounting—and transparent, quick-dump collector—greatly simplify servicing. Dash indicator shows "red" when cleaner element needs washing.

New final drive ...new rigidity

New TD-20 final drives have been strengthened to deliver full torque turbocharged power to the tracks. New sprocket drive doweling increases housing rigidity—helps maintain precision component alignment. Other major steps ahead in TD-20 design include: new torque-taking, life-adding bimetallic steering clutch discs; new pivot shaft inner spacer; new hardness of sprocket drive pinion shaft.

International® Construction Equipment

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois

A COMPLETE POWER PACKAGE

New Equipment . . .

Continued from page 53

ers give large ground bearing capacity for special crane service.

Ease of transporting. Crawler side frames and counterweight can be removed easily to meet clearance requirements and load restrictions when trailing.

Three power options. Choice of gasoline, diesel or electric drives, with torque converters, is offered.

Construction features include heat-treated ground shafting, machine-cut gear teeth, and booms built of high-strength tubular welded alloy steel.

Extremely large ground bearing area for special crane service can be provided by extra large crawlers—42-inches wide by 17 feet 1½ inches long—which furnish an overall spread of 14 feet.

The gantry is a high, folding type with telescoping legs. Power-raised or lowered by boom hoist cables, the gantry folds to cab height to permit the crane to pass under 12-ft. clearances.

Rubber Blasting Mats

Manufacturer: O. B. Wasbotten & Sons, Department EE, 1609 Arrowhead Rd., Duluth 11, Minn.

Claims: A new, heavy-duty rubber blasting mat is available for blasting in congested areas.

It is made of sliced-up auto tire casings woven together with steel cables to form a thick, strong, resilient covering. Said to cost half as much as conventional equipment, the new rubber mat is also reported to resist damage indefinitely under normal blasting conditions. Should a heavier-than-normal blast occur, however, it is easily repaired.

According to the manufacturer, the mat gives more protection against fly rock than ordinary steel mats. This is because it has the natural resiliency of rubber and also has great weight. A 10-ft. x 12-ft. rubber mat, for example, weighs about 2,400 pounds. Wire or rope slings are used for handling.

Another advantage of the rubber mat is that it will not shortout electric blasting caps, Wasbotten claims. Consequently contractors working in built-up areas can use millisecond delay electric blasting caps to get greater production at minimum energy levels.

Available in three standard sizes—6x10, 10x12, 10x15—the mats cost about $2 per square foot FOB Duluth, Minn. Immediate shipment is made from stock.

Hydraulically Operated Tournatractor

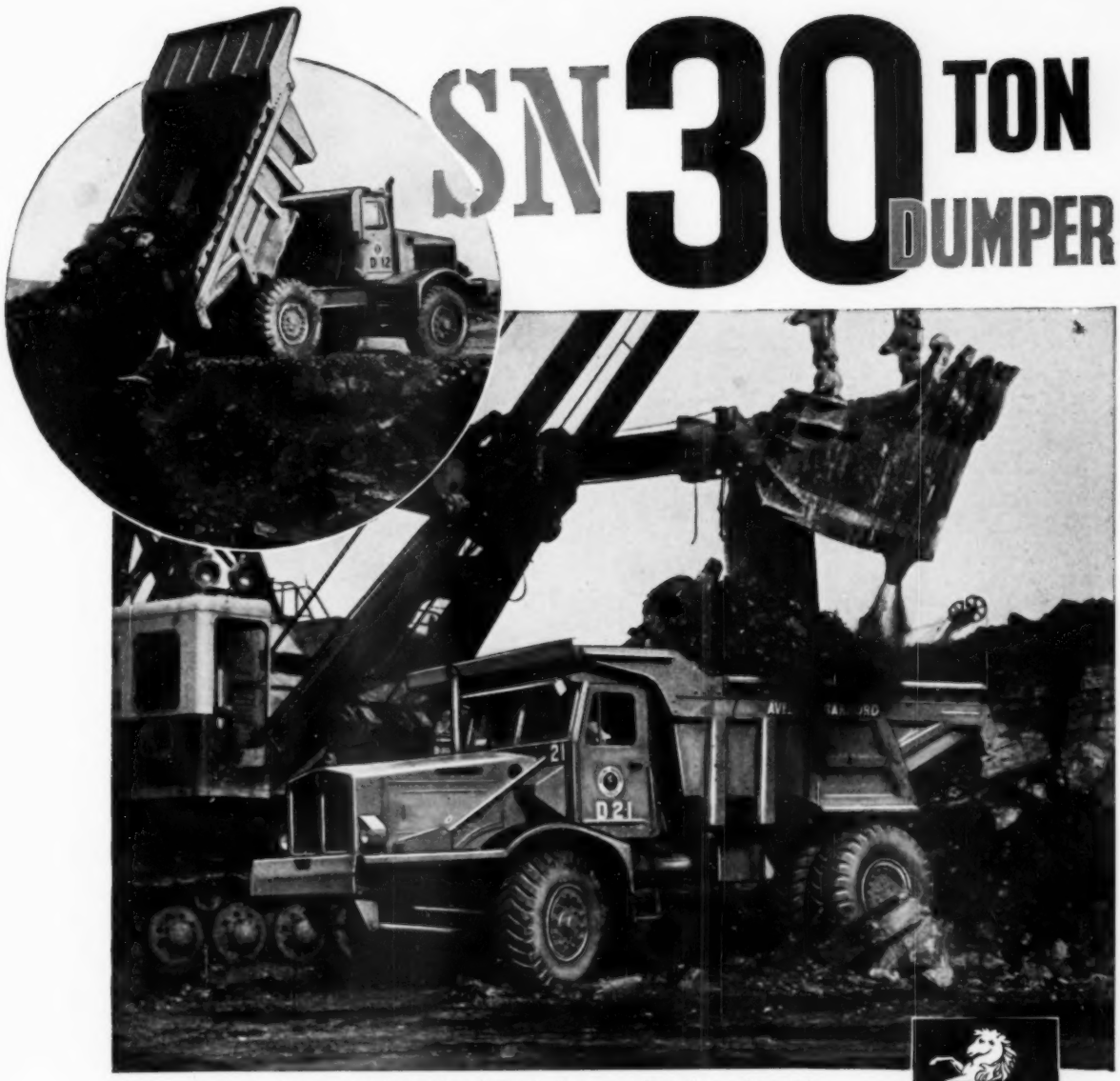
Manufacturer: LeTourneau - Westinghouse Co., Department EE, 2301 N.E. Adams St., Peoria, Ill.

Claims: LeTourneau-Westinghouse has announced a new model C Tournatractor with hydraulically operated attachments as a companion unit to the current C Tournatractor with electrical controls.

The new unit will differ from the present Tournatractor in many ways—and from other tractors with hydraulics as well. The machine will utilize a high pressure hydraulic system of 5,000 psi, although other sys-

Continued on page 60

SN 30 TON DUMPER



Photograph by courtesy of The National Coal Board, Open Cast Executive & Lomount Construction Limited.

Biggest and most powerful British-built off-highway earthmover, the Aveling-Barford 'SN' 30-Ton dumper is unmatched in capacity, power and speed. It has a 400 B.H.P. Rolls-Royce turbo-charged engine and optional transmissions giving 6-forward and one reverse speeds —top 30 m.p.h., or Allison Torqmatic No. CLBT5940, with four forward speed ranges and one reverse, top 33 m.p.h.

Its rugged body of high tensile steel is built to withstand heavy pounding of impact loading from big excavators and to resist the abrasive action of rock, iron ore or overburden constantly grinding over the surface as the load is discharged.

The 'SN' is easy to handle. Steering is power-assisted; brakes are air-powered, and the tip—hydraulically operated and fully controlled—can be held at any angle. For full particulars write for Publication No. 1852.

·INVICTA·

AVELING-BARFORD LTD
Grantham
England

Aveling-Barford SN 30 TON DUMPER

11000 turbocharged diesel engine—conservatively rated at 184 hp, features Allis-Chalmers unique controlled turbulence principle that gives you more work power for less fuel dollar.

New ARROWHEAD cutting edge—provides longer life and adds protection and strength for the bucket bottom and side plates.

Safe, sure air brakes—four-wheel air brakes let you work with confidence on the steepest grades and stockpiles. If air pressure should fall below 55 psi, an interrupter in the horn circuit warns the operator in plenty of time to make necessary adjustments.

Full box frame—soaks up stress and strain . . . offers outstanding balance and stability . . . permits efficient equipment mounting.

NEW TL-30

184 hp
10,500-lb carry capacity
2½- to 6-cu-yd buckets
Weight: 28,400 lb

Best power and capacity in its size range

The new Allis-Chalmers TL-30 will give you more production than any other loader in this class. Its modern 11000 turbocharged diesel delivers 184 hp . . . up to 13 percent more power than others its size. This high-power output is delivered by a combustion system that has established itself as the most efficient in the industry. Proved in other Allis-Chalmers engines, this controlled turbulence, open combustion chamber design, gives you thorough mixing of air and fuel for complete, fast and even combustion . . . high fuel economy.

When it comes to carry capacity, the new TL-30 sets the pace in the industry. It carries up to 10,500 lb . . . a big 16-percent bonus over other loaders in this size range. This extra capacity lets you increase material flow . . . reduce handling costs on every shift.

The new TL-30 also features the same exclusive design and construction advantages in other Allis-Chalmers tractor loaders. Single-lever control; high dumping clearance and long reach; pin-connected axles; 5-way hydraulic filtering protection; safe dump cylinder location and added loader stability are some of the reasons why Allis-Chalmers tractor loaders have received tremendous acceptance by contractors, road builders and public officials around the country . . . in fact, around the world.

Before you decide on your next loader, make sure you get the complete story on the new TL-30, plus information on the other five tractor loader models—from 77 to 130 hp . . . 3,600 to 9,000-lb carry capacities. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

move ahead with

ALLIS-CHALMERS

. . . power for a growing world

TRIAL SAMPLES

Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!

HANDI-LUBE LIQUID GEAR COMPOSITION

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal —no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

WIRE ROPE SPRAY LUBRICANT

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300% —special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:

- Open Gears, Dipper Sticks, Cams
- Enclosed Gear Cases
- Wire Rope and Cable
- Hydraulic Units, Torque Converters
- Roller, Ball, and Sleeve Bearings
- Speed Reducers

Est. 1893

THE WHITMORE MANUFACTURING CO.

LUBRICATING ENGINEERS

CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

New Equipment . . .

Continued from page 57

tems are normally 1,500 to 2,000 psi. Instead of the usual vane or gear type, this unit is using a direct-drive Dynex piston pump. Another innovation is the use of two slide valves in the control system, as opposed to the spool or poppet valve. The immediate build-up of pressure, in opening the slide-valve, gives faster, more positive response of the blade.

This new C tractor is powered by a new GM 6V-71 engine, producing 218 hp. The transmission is the LW power-shift type, air actuated with torque converter, four speeds forward, and a top speed of 18.5 mph.

Another new feature is the integral 1,400-rpm power take off, for use with the double-drum power-control unit in operation of towed equipment.

Installation of a new engine permitted re-designing of the hood and cowling. The tractor was shortened 18 inches to an over-all length of 13 feet 6 inches, without the blade. The over-all width is 10 feet 6 inches.

Also announced is a new dirt handling C blade for use with both model C Tournatractors. This new blade is 13 feet long, 3 feet 9 inches high and has a maximum pitch adjustment of 12°. The blade weighs approximately 5,000 pounds.

Tooth Points

Manufacturer: Hensley Equipment Co., Inc., Department EE, 800 Peralta Ave., San Leandro, Calif.

Claims: A line of "Shark Fin" wear points that provide maximum wear with minimum maintenance costs have been developed by Hensley.

According to Clyde Hensley, president of the Bay Area firm which manufactures dozer rippers and allied tractor parts, the new wear points offer complete coverage for shovels draglines, backhoes, rippers and trenchers.

Self-sharpening and quick changing, the wear points are designed to decrease digging resistance, keep points sharp and protect shanks. They are cast from a new super strength, abrasive resistant alloy steel.

Advertisers in This Issue

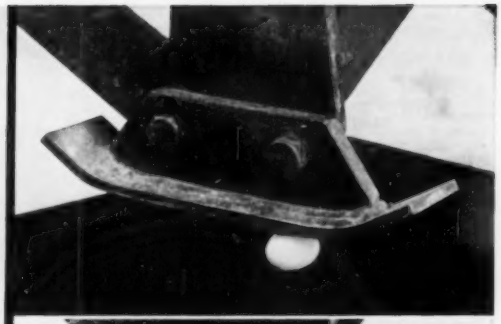
Allis-Chalmers	58–59
Aveling-Barford Ltd.	57
Bethlehem Steel Co.	48
Bucyrus-Erie Co.	2nd Cover, 26, 46–47, 61
Caterpillar Tractor Co.	20–21, 51
Drake-Williams Mount	50
Eimco Corp., The	31
Electric Steel Foundry Co.	17–18
For Sale (Classified)	62–66
Geotechnical Corp.	44
H&L Tooth Co.	45
Hendrix Mfg. Co.	2
Hercules Powder Co.	27
Ingersoll-Rand Co.	49
International Harvester Co.	54–55
Macwhyte Co.	3
Marion Power Shovel Co.	30
McCaffrey, M. P., Inc.	53
Owen Bucket Co., The	29
Sauerman Bros., Inc.	43
Timken Roller Bearing Co., The	4th Cover
Whitmore Mfg. Co.	60
Williams Bucket Div., Wellman Engineering Co.	3rd Cover

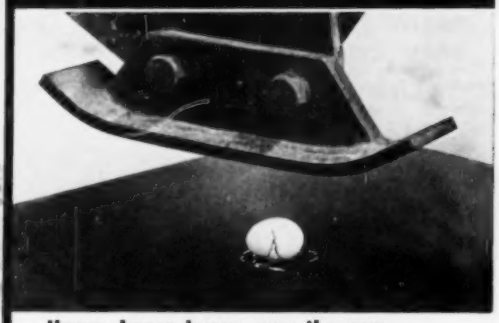
SO GENTLE–

you can just crack an egg

The oil-smooth control of the Hydrocrane® hydraulic crane gives you unbelievable precision and accuracy handling light or heavy loads. That's because there are no clutches to slip, no brakes to grab, no sudden, jerky control movements. Yet you're talking about a husky crane that handles loads up to 24,000 lb.

...most respected name in the field





Heavy, heavy hangs over the egg

Nine tons of steel ease down and just touch this uncooked egg. Gradually, the pressure increases — as slowly as the operator moves his hand. Hairline cracks creep across the shell, then broaden until the thin inner membrane ruptures. Hold it. Back off. There it is — just cracked but still intact. This demonstration of Hydrocrane's unusual precision speaks for itself.

SO PRECISE–

you can thread the needle in hot spots

The Hydrocrane boom telescopes with the same smooth hydraulic action. It telescopes on the move, too. You don't have to stop to pull pins or add sections. You can make your pick in close, then ease the load into position even under low overhead structures. Yet you're talking about a crane that can reach up to 70 ft high with a jib.

SO COMPACT–

you can work without elbow room

Precision control and telescoping boom lets you work in narrow alleys and other cramped areas. You can install transformers without danger of chipping adjacent structures. With interchangeable hoe, you can excavate in developed areas where existing pipe and conduit call for the type of control that only Hydrocrane can give.

Let your Bucyrus-Erie distributor arrange a demonstration. See for yourself why the Hydrocrane is in a class by itself for your tough installation jobs. Call him or write for full details from Bucyrus-Erie Company, South Milwaukee, Wis.

7H60

BUCYRUS ERIE

TO ADVERTISE: All advertising in this section is payable in advance. Rate $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters. Count spaces and punctuation as one character each. Be sure to enclose the correct amount of money with your order. Rates and conditions subject to change without notice. Closing date—10th of preceding month. Example: January closes December 10th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the listed address. If box number is used, mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

HEAVY EXCAVATION EQUIPMENT
DRAGLINES, SHOVELS, CRANES, DRILLS, TRUCKS

9-W B.E. Elec. Drag, 200', 8 yd. or 160', 10 yd.
9-W B.E. Diesel Drag, 165', 12 yd.
7-W B.E. Diesel Drag, 140', 7 yd.
7400 Marion Diesel Drag, 175', 13 yd.
7400 Marion Elec. Drag, 175', 12 yd.
625 Page Diesel Drag, 160', 9 yd.
631 Page Elec. Drag, 200', 8 yd.
621-S Page Diesel Drag, 125', 7 yd.
200-W B.E. Diesel Drag, 125', 6 yd.
2400 Lima Elec. Drag, 130', 6 yd.
2400 Lima Diesel Drag, 130', 6 yd.
7200 Marion diesel drag, 135' 5 yd.
4500 Manitowoc Drag, 120', 5 yd. & 140', 4 yd.
120-B B.E. Elec. Drag, 115', 5 yd.
71-B B.E. Crane with 160' boom.
3900, 3500 & 3000 Manitowoc Cranes.
111-M Marion Drag, 100', 4 yd.
1055 P&H Diesel Drag, 80', 4 yd.
1601 Lima 4 yd. Shovel/Drag.
1201 Lima Drag, 85', 3 yd.
54-B B.E. Drag, 80', 2½ yd.
5560 Marion 26 yd. Elec. Shovel.
5323 Marion 18 yd. Elec. Shovel.
190-B B.E. 8 yd. Elec. Shovel.
151-M Marion 7 yd. Elec. Shovel.
1600 P&H 6 yd. Elec. Shovels.
170-B B.E. 6 yd. Elec. Shovel.
4161 Marion 6 yd. Elec. Shovel.
2400 Lima 6 yd. Std. & H.L. Shovels.
120-B B.E. & 4121 Marion 4 yd. Elec. Shovels.
1055 P&H 3 yd. H.L. Shovel.
111-M Marion Std. & H.L. Shovels.
1201 Lima & 54-B B.E. Standard Shovels.
#6 Northeast 1½ yd. Standard Shovel.
Model T-650 REICHdrill Truck Mtd. Rotary & Down-The-Hole.
Ingersoll-Rand Truck & Crawler Mtd. Drillmasters.
Keystone #50 Truck Mt. Stardrill.
Euclid Trucks, Rr. & Bottom Dump; Dozers, etc.

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton National Bank Bldg.
Hazleton, Pa. — GLadstone 5-3658

EUCLIDS
Rear, Bottom and Scrapers

12-yd. Bucyrus-Erie dragline.
9-yd. Bucyrus-Erie dragline.
8-yd. Bucyrus-Erie shovel.
6½-yd. Bucyrus-Erie shovel.
4-yd. Bucyrus-Erie shovel.
4-yd. Bucyrus-Erie dragline.
3-yd. Bucyrus-Erie shovel.
2½-yd. Bucyrus-Erie shovel and dragline.
1½-yd. Bucyrus-Erie shovel.
5-yd. Manitowoc shovels and drags.
6-yd. Lima dragline and shoveis.
Large stripping shovels.
Other equipment available, not listed above.

WILLIAM LUBRECHT, III
Construction Equipment
311 W. Diamond Ave. Hazleton, Pa.
Phone: GLadstone 5-4041 or 5-0523

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

Bucyrus-Erie 170-B electric shovel. Located Anthracite region. Available immediately. Excellent condition. For further information write:

EXCAVATING ENGINEER
Box 3765 South Milwaukee, Wis.

Marion 482 #6353
Marion 4161 #8197
Bucyrus-Erie 54-B Diesel #103533
Bucyrus-Erie 150-B shovel #106870
All equipment subject to prior sale
Contact:
PICKANDS MATHER & CO.
Purchasing Department
700 Sellwood Building
Duluth 2, Minn.

Bucyrus-Erie model 750-B electric shovel with 95-ft. boom, 64-ft. handle and 12 cubic yard dipper. Some spare parts included. Location east central states. Write:

EXCAVATING ENGINEER
Box 3763 South Milwaukee, Wis.

Lima model 2400 dragline, 120-ft. boom, 7-cu. yd. dragline bucket, Cooper Bessemer STR-8 diesel engine. Air start auxiliary engine, light plant. Location western Pennsylvania. Write:

EXCAVATING ENGINEER
Box 3766 South Milwaukee, Wis.

Bucyrus-Erie 190-B electric shovel 8-yd. dipper. Bucyrus-Erie 170-B electric shovel with 6½-yd. dipper. Location Eastern United States.
Write
EXCAVATING ENGINEER
Box 3758 South Milwaukee, Wis.

Bucyrus-Erie electric 120-B. Combination shovel-dragline. Located Anthracite region. Excellent condition. Priced to sell. For further information write:

EXCAVATING ENGINEER
Box 3764 South Milwaukee, Wis.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

Marion model 5561 stripping shovel, 112-ft. boom, 57-ft. 9-in. effective handle, 48-ft. 10-in. over-all length of crowd handle, 40 and 47-cu. yd. dippers. Location Middle West. Write:

EXCAVATING ENGINEER
Box 3767 South Milwaukee, Wis.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

1953 Link-Belt model LS-85 excavator 7A1936, powered by a model D318 Caterpillar diesel engine. Price $7,500.
1948 P&H model 150 excavator, powered by a 1955 model 2-71 G.M. diesel. Price $2,500.
Two Mack diesel engines—model END673, Mack Thermodyne Diesel, 175-hp, 673 cubic inch displacement. One with 13,925 miles, 986 hours. Price $2,500. One with 2,587 miles, 152 hours. Price $3,000.

PETER B. GERMAN, INC.
Morehouse Highway Fairfield, Conn.

Bucyrus-Erie model H-5 Hydrohoe, equipped with 24" and 36" hoe dippers, and mounted on 1958 GMC MW503V chassis with remote control. Price FOB northwestern Ohio $18,000. Call or write to:

W. W. WILLIAMS CO.
835 Gooddale Road Columbus 12, Ohio
Tel.: CA 8-6651

Northwest model 6 backhoe, wide pads, used three months.
Bucyrus-Erie 38-B shovel. Cat engine, was crane and has new 1948 shovel front.
2—LaPlant Choate scrapers, model C8, very reasonable.
Michigan 75-A front end loader, engine just overhauled.

R. E. CUNNIFF
393 Brookline St. Newton, Mass.

IMMEDIATELY AVAILABLE

B-E model 120-B elec. shovel #46011 Westinghouse apparatus.
B-E model 120-B elec. shovel #58182 Westinghouse apparatus. (Machine #58182 includes dragline attachment)
B-E model 120-B elec. shovel #52553 G.E. apparatus.
B-E model 120-B elec. shovel #52555 G.E. apparatus.
B-E model 5-W dragline #609 diesel powered.
B-E model 5-W dragline #716 diesel powered.
Located in northeastern U.S.A., available for immediate inspection and delivery.
B-E model 200-W diesel dragline #735. Machine is presently located in Montana.

EXCAVATING ENGINEER
BOX 3760 SOUTH MILWAUKEE, WIS.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

New Condition

Bucyrus-Erie H-5 Hydrocrane hoe-crane and H-3 Hydrocrane hoe-crane. Liberal discount from new price. Private.

EXCAVATING ENGINEER

Box 3762 **South Milwaukee, Wis.**

MOTOR GRADERS

Adams model 512 motor grader with 13.00 x 24 tires front and rear, cab, scarifier, lights, heater, defroster, windshield wipers, power steering, snow plow and wing. Engine overhauled recently. Price: F.O.B. Lansing $6,250

Austin-Western Master 99 motor grader, cab, windshield wipers, scarifier, lights. Price: F.O.B. Detroit $8,650

Adams model 610 grader, 14.00 x 24 tires front and rear, cab, scarifier, power steering. Price: F.O.B. Lansing $7,900

SCRAPERS-ROOTERS

LeTourneau-Westinghouse model "C" Tournapull with cab and 24" tires front and rear. #GT 4434. Price: F.O.B. Detroit. $12,000

LeTourneau-Westinghouse model "D" Tournapull, 18.00 x 25 tires front and rear. Price: F.O.B. Detroit $7,500

LeTourneau-Westinghouse model "D" Tournapull, 18.00 x 25 tires front and rear. Price: F.O.B. Detroit $8,500

LeTourneau-Westinghouse model S3 rooter. Like new condition. For use with tractor of 50 hp or more. Price: F.O.B. Detroit. $1,000

MISCELLANEOUS

Littleford model 115 Tankar Heater. Price: F.O.B. Lansing $950

Galion model "P" 3-5 ton portable patch roller. Price: F.O.B. Lansing $995

Layne-Northern pump, capacity 1,200 gpm @250 feet, 100-hp electric motor, 200' casing, 21 pieces tubing and 21 pieces drive rod. Price: F.O.B. Detroit $2,000

10-ton stiff leg derrick, requires 50-75-hp electric motor. Price: F.O.B. Lansing $2,000

Wisconsin model TF, 3¼" x 3¼" two-cylinder power unit, with gear reducer, 1⅝" shaft, specifications #63367. Like brand new. Price: F.O.B. Lansing $199

LeTourneau-Westinghouse model "C" Tournapull w/P19 scraper. Price: F.O.B. Lansing $13,500

Warner & Swasey 36" push type rehandling bucket. Price: F.O.B. Detroit, Mich. .$400

Warner & Swasey Gradall, Minneapolis-Moline gasoline engine on upperstructure. Duplex 4 x 6 carrier. Good condition, serial #NP 26690. (Model 2460). Price: F.O.B. Lansing $7,500

TRACTORS

TD9 International crawler tractor with Bucyrus straight bulldozer blade. Good tracks, cleaned and painted. Price: F.O.B. Detroit $5,000

Caterpillar DW10 rubber tired tractor. Price: F.O.B. Lansing $3,500

Oliver OC3 crawler tractor. Price: F.O.B. Detroit $2,000

Used A-C model HD21A crawler tractor, serial #8483, with Garwood bulldozer. Rebuilt in the fall of 1960. Price: F.O.B. Lansing $15,000

TELFORD EQUIPMENT CO.

Detroit, Mich. **Ph. WEbster 3-7330**
Lansing, Mich. **Ph. IVanhoe 4-1468**

Bucyrus-Erie model H-5 Hydrohoe, equipped with 24" and 36" hoe dippers, and mounted on 1958 GMC MW503V chassis with remote control. Price FOB northwestern Ohio $18,000. Call or write to:

W. W. WILLIAMS CO.

835 Goodale Road **Columbus 12, Ohio**
Tel: CA 8-6651

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Lorain 41 shovel ¾-yd. Cat D4600 engine, S/N 14597. $5,000.

Bucyrus-Erie 51-B dragline, S/N 117039, w/50' boom, pendant suspension, torque converter, 14,000# counterweights, long and wide tracks, 36" pads, powered with "Cat" 337F diesel engine. Very good condition throughout. Also have 2-yd. Hendrix dragline bucket.

Esco ¾-yd. orange peel model 379. Excellent. $2,125.

American double-drum sheepsfoot roller, model AD96 with wedge type feet, 48" width drums, diameter 60" good condition. $2,000.

Model 25 Northwest backhoe, ¾-yd. Caterpillar D4600 engine, very good condition. $10,750.

Model 300 International tractor with Wain-Roy backhoe, model H-700, 12" bucket, both 1956 models in excellent condition. $3,750.

Wooldridge model BB120, 14 to 18-yd. scraper, tires 18:00 x 24 65% of new. Scraper in good condition. $2,500.

Model C Scoopmobile with 22' tower and pallet forks, with ¾ yard bucket excellent condition. Chrysler gasoline engine. Capacity 4,000 pounds. $3,900.

Model 25 Bay City shovel, dragline, backhoe, combination, serial No. 6465, 1952 model, Caterpillar 315 engine, very good condition, $10,800 with any one front. Add $1,250 for each additional front.

Bucyrus-Erie 15-B—½-yd. dragline, standard tracks 16" treads, 35' boom, very good condition throughout. 1959 model with less than 2000 hours. $15,925.

K-12 Insley dragline with 45' boom, fairleads. Serial No. 11289, 1955 model, Buda 326 gasoline engine. Machine in good condition throughout. $8,500.

Carver KN10L 10" centrifugal pump, Continental model B427 gasoline engine, 80-hp 6-cylinder, 1,800 rpm, with 10' suction hose, 20' of intake pipe, 60' discharge pipe, mounted on trailer.

CONTRACTORS SUPPLY

620 E. 18th St., Kansas City, Mo.
Phone: BA 1-7788

Model TU-3 Snogo snow plow, Serial No. 768, with Climax R-61 engine, Serial No. 15825, mounted on FWD truck.

New KT-8 4-6 ton Buffalo-Springfield tandem roller, Serial #29765. Powered with Y112 Continental engine with torque converter. Including retractable towing attachment and brakes on wheels.

Koehring model 205 shovel and hoe, ½-yd., Serial No. 5262C, powered with International gas engine #17366. 1948 model.

Model L-41 Lorain hoe with Waukesha gas engine. Serial No. 17832.

Unit model 1020 ¾-cu. yd. shovel, Serial No. 51256, powered with Chrysler gas engine.

K12 Insley ½-yd. backhoe, Serial #3671, powered with Buda engine.

CLYDE EQUIPMENT CO.

3410 First Ave., S.
Seattle 4, Wash.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

CRAWLER TRACTORS

HD5G Serial No. 5394. Price: "As is" $3,600.

HD5G Serial No. 8950. Completely rebuilt. Price: $6,100.

HD5G Serial No. 8928. Completely rebuilt. Price: $7,200.

HD5G Serial No. 10718. Completely rebuilt and rented a short time. Price: $4,600.

HD5G Serial No. 19035. Completely rebuilt. Price: $7,600.

HD6G Serial No. 3136. Rebuilt and rented. Price: $10,750.

HD11 hydraulic dozer Serial No. 3508. Completely rebuilt. Price: $12,500.

HD16 Serial No. 2304 with double drum power control unit and cable dozer. Rebuilt and rented. Price: $14,500.

HD21 Serial No. 7876 with cable dozer and rear double drum power control unit. Completely rebuilt. Price: $18,000.

HD21 Serial No. 8695 with cable dozer and rear double drum power control unit. Rebuilt and rented. Price: $15,000.

HD21 Serial No. 11821 with rear double drum power control unit and cable dozer. This machine has been used approximately three months only. Replacement cost is over $43,000. Price: $35,000.

HD21 Serial No. 7116 with rear power control unit and push block. Rebuilt and rented. Price: $14,000.

SCRAPERS AND GRADERS

Allis-Chalmers model 45 motor grader. Fully equipped with cab, scarifier, etc. Used only three months. Price: $17,000.

Two Allis-Chalmers TS260 motor scrapers. Serial Nos. 2557 and 2558. Both have been rented a short time since complete rebuilding. Price: (each) $20,000.

Allis-Chalmers TS260 motor scraper. Serial No. 4161. This is a late model 260 with very little use. Price: $26,000.

Five Allis-Chalmers TS360 motor scrapers. Serial Nos. 1283, 1461, 1607, 1608 and 1610. These have been rebuilt and used as rental machines. Take your choice at: Price: $15,000.

Allis-Chalmers AD3 motor grader Serial No. IF501. Has cab. Necessary repairs were made on this machine and it was rented a short time. Price: $3,000.

Allis-Chalmers AD3 motor grader Serial No. IF539. Almost $4,000 has gone into this machine in repairs. Price: $6,000.

Allis-Chalmers TL20D Serial No. 568 with 3-yd. bucket. Price reduced after rental. Price: $13,000.

CRANES

Bucyrus-Erie 15-B hoe. Serial No. 61150. An "as is" machine. Price: $5,500.

Bucyrus-Erie 22-B Transit crane. All necessary repairs have been made and this unit is in excellent condition. Price: $23,000.

Bucyrus-Erie 22-B hoe. Serial No. 94174. "As is." Price: $7,000.

D. D. KENNEDY, INC.

P. O. Box 177 **Bellwood, Ill.**
AUstin 7-4300 **LInden 4-5600**

PIPELINE EQUIPMENT

5—1958 Caterpillar model 583 sidebooms
1—Cleveland model 140 trencher
2—Cleveland model 320 trenchers
2—Caterpillar D8 sidebooms
2—American 28-bbl. agitating dope pots
2—Crose 24"-26" pipe defrosters — new
1—CRC model 30-B pipe bending machine
10—Lincoln 250-amp diesel welders
1—Cleveland model 190 backfiller
1—Bucyrus-Erie model 22-B comb. clam, crane, drag and backhoe
1—Bucyrus-Erie model 38-B comb. clam, crane, drag and backhoe
6—1958 International model A120 4x4 pickup trucks

PAVING EQUIPMENT

1—Foote Kinetic Mixer model EM
1—Adnum 8' blacktop paver
1—Lima roadpacker
1—Rome model 4MR disc
1—Bros 50-ton model 450 rubber-tired compactor
1—American 4' tandem sheepsfoot compactor
2—Gardner Denver 315-cfm compressors on wheels
1—Gardner Denver 500-cfm compressor on wheels

CONTRACTING & MATERIAL CO.

165 W. Hintz Road **Wheeling, Ill.**
LEhigh 7-0014

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

IN DALLAS

Bucyrus-Erie 15-B dragline, s/n 72928, reconditioned.
Bucyrus-Erie 22-B dragline, 35′ boom, Cat diesel engine, s/n 92141, reconditioned.
Bucyrus-Erie 22-B comb. 50-10 dragline, 45′ boom, Cat D318 engine, s/n 73017, reconditioned.
P&H ½-yd. dragline, s/n 59060.
Quickway E shovel mounted on White tandem truck.
Northwest 25, ¾-yd. backhoe, GM diesel, s/n 11313, to be reconditioned.
Northwest 25 dragline, 35′ boom, Cat diesel, s/n 19078, reconditioned.
Insley L backhoe, s/n 7508, to be reconditioned.
Insley L dragline and clamshell, s/n 7389, to be reconditioned.
Insley K-12 backhoe and dragline, s/n 11031.
Insley K-12 dragline, 35′ boom U9 IHC engine, s/n 1619.
Backhoe attachment for Northwest 25.
Backhoe attachment for Lorain TL-25.
Backhoe attachment for Link-Belt LS-50.
Shovel attachment for Lorain TL-25.
Shovel attachment for Link-Belt LS-50.
Shovel attachment for Marion 362.
P-M ½-yd. dragline bucket #1141.
Hendrix ¾-yd. dragline bucket #15632.
Hendrix ⅝-yd. dragline bucket #22515.
3—Blaw-Knox ¾-yd. clamshell #H8808-09-8335.

AT HOUSTON

Bucyrus-Erie 10-B hoe and dragline, Hercules gas engine, 14″ shoes.
Bucyrus-Erie 15-B dragline, s/n 114646, UD9 IHC engine, 35′ boom, to be reconditioned.
Bucyrus-Erie 22-B dragline, s/n 56343, UD14 IHC engine, 45′ boom, to be reconditioned.
Bucyrus-Erie 22-B hoe (st. boom) s/n 101143, UD14 IHC engine, tractor-type mounting, extra counterweight.
Lorain TL-20 dragline, s/n 15456, 35′ boom, Cat D4400 diesel, 22″ shoes.
Northwest 25 dragline, 30′ boom, s/n 11496, 28″ shoes, GM 3-71 diesel engine.
Bucyrus-Erie 15-B hoe attachment (st. boom).
Bucyrus-Erie 22-B 20-A hoe attachment (cambered boom) with ¾-yd. Esco dipper.
Blaw-Knox ¾-yd. gen. purpose, size 672 bucket, s/n H8810.
Hendrix ⅝-yd. bucket, s/n 7316.
Hendrix ¾-yd. bucket.
Yaun ⅝-yd. bucket, s/n 4600.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

AT LUBBOCK

2—Bucyrus-Erie 15-B hoes, s/n 118931 & 936, Cat diesel engine, to be reconditioned.
Bucyrus-Erie 22-B hoe, s/n 114600, UD-525 IHC engine, standard flat tracks.
Bucyrus-Erie 22-B dragline, s/n 106001, 35′ boom, Cat D318 engine, standard flat tracks.

BROWNING-FERRIS MACHINERY CO.

Dallas, Texas	Longview, Texas
305 Exposition	Highway 80
TA 3-8121	PL 9-2761
Lubbock, Texas	**Houston, Texas**
2424 Clovis Rd.	2619 Texas Ave.
PO 5-7455	CA 5-3231

Lorain TL-25S shovel with Cat D315 diesel engine. Serial #25164.
Price FOB Charlotte, N. C. $8,000
Link-Belt K-580 2½-yd. shovel with Cat D17000 engine. Serial #2733.
Price AS IS, WHERE IS, near Greensboro, N. C. $18,500
Allis-Chalmers TS-260 motor scraper. Serial #2690.
Price FOB Greensboro, N. C. $24,000

E. F. CRAVEN CO.
Greensboro, N. C.
P. O. Box 3307 — **515 S. Eugene St.**

Bucyrus-Erie 54-B shovel #100761, GMC diesel model 6-110, Torcon converter, 36″ pads. Rebuilt.
Bucyrus-Erie 54-B shovel #107758, Buda 6DC-1879 engine. Rebuilt.
Bucyrus-Erie 54-B shovel #51079, Buda engine model 6DC1879.
Bucyrus-Erie complete 54-B shovel attachment.
Four Caterpillar DW20 scrapers #11C880, 891, 892, 901, excellent condition.

W. I. CLARK CO.
P. O. Box 361 — **New Haven, Conn.**
Tel. CH 8-2131

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Thew ¾-yd. shovel, L-26, s/n 26401, GMC diesel, torque converter. Purchased new Oct. 1956. Very good condition—Reasonable.

CLEVELAND QUARRIES CO.
Amherst, Ohio

EXCAVATORS

2—Bucyrus-Erie 30-B shovels, GMC 4057 engines, repaired, cleaned and painted, excellent condition, ready for a production job. One with Torcon converter, near new. Dragline-hoe attachment available.
1—Bucyrus-Erie 22-B dragline, IHC UD-14A engine, 50′ boom, fairlead. Serviced, repaired, cleaned and painted.
1—Lorain TL-25 dragline, Cat 315 engine, 35′ boom, fairlead, wide tread, 22″ track pads, rebuilt, excellent condition. See it before you buy.
1—Northwest 25 dragline, Cat 4600 engine, 35′ boom, fairlead. Serviceable as is.
1—Link Belt LS-71 dragline, IHC UD-14A engine, 45′ boom, fairlead. Repaired, cleaned and painted, priced to sell.
1—Lima 604 dragline, Cummins HIS engine, 50′ boom, fairlead. A serviceable machine, checked, cleaned and painted.
1—Lima 34 dragline, Cat 318 engine, 35′ boom, fairlead, workwise and serviceable. A bargain. Can you use it?
1—Quickway model "L" trench hoe, IHC U-9 engine, mounted on FWD commercial chassis, single rear axle. A clean machine and carrier. Need a good dependable rig? Look it over, try it, buy it.

EXCAVATOR ATTACHMENTS

1—Bucyrus-Erie model 22-B shovel attachment complete, good condition—a bargain.
1—Bucyrus-Erie model 120-B dragline attachment complete, fairlead and deck equipment. Good condition.
1—Quickway model "L" dragline, crane attachment, complete, fairlead, 30′ boom, pin connected, pendant suspension, ½-yd. Quickway drag bucket.
1—Quickway model "L" shovel attachment complete, good condition.
1—Wellman, 1-yd. drag bucket, size 201, model DXL, repaired, ready to go to work.
1—Lima 604 shovel attachment complete, good condition, serviceable as is.
1—Kiesler 2½-yd. clamshell bucket type "H", good condition.
1—Lima 34T hoe attachment, 30″ dipper. Excellent condition.

SCRAPERS & TRUCKS

2—Euclid SS-24's, 33LDT Tractors with 32SH scrapers, turbo charged, Cummins engines, 27 x 33 30-ply rubber. Late models, serviced and ready to go.
3—Euclid 7-TDT tractors with 14SH scrapers, Cummins engines, good rubber, machines serviced, checked. Cleaned and painted, ready to go.
2—Euclid 14TDT tractors with 21SH scrapers Cummins engines, rubber fair to good. Serviceable, workwise, as is.
1—Euclid 23-TDT tractor with 122-W bottom dump wagon. GM 6-110 engines, good condition. Located at Los Angeles.
2—Caterpillar DW10's IV Series with #15, 4W Series scrapers, serviceable units. Checked, repaired, cleaned and painted.
2—Caterpillar DW20's, turbo-charged engines. Serviced, cleaned and painted. Rubber good.

CRUSHING & ASPHALT EQUIPMENT

1—Barber Greene 848 asphalt plant with 813 feeder, 881 cold elevator, 837 dryer, 880-6-1 and 880-3-1 hot elevators. Clarage type 1E dual exhaust fan powered by UD9 engine, Twin Cone dust collector, 866 gradation unit, 348 screen, 848 mixing unit, powered by GMC 4-71 engine, gradation unit and some elevators with electric drives, switch panel and controls for motors. Caterpillar D13000 diesel electric set trailer mounted. Cleaver Brooks 125-hp portable steam generator, trailer mounted, auxiliary asphalt pump with gasoline power. Plant is available in good mechanical and operating condition. Has produced 15,000 tons material, since thoroughly overhauled, cleaned and painted.
1—Standard maintenance type asphalt distributor, trailer mounted, dual tires, Wisconsin engine on pump, serviced, cleaned and painted, ready to go to work.

FOR SALE

10	15-cu. yd. Euclid mod. 63TD end dumps	$24,000 ea.
5	15-cu. yd. Euclid mod. 46TD end dumps	24,000 ea.
10	30-cu. yd. Athey mod. PW20 bottom dump trailers only	13,000 ea.
12	30-cu. yd. mod. MX 30 Southwest bottom dump trailers	5,000 ea.
10	DW20 Cat tractors w/30-cu. yd. mod. PW20 Athey bottom dump trailers	27,000 ea.
8	Mod. LRVX Mack tractors w/30-cu. yd. model 137W Euclid bottom dump trailers	36,500 ea.
4	D9 Cat tractors w/PCU's & dozers, 18A Series	26,500 ea.
8	D8 Cat tractors w/PCU's & dozers, 14A Series	16,500 ea.
2	Mod. 33LDT Euclid pneu. tired scraper units	27,000 ea.
10	DW20 Cat scraper units w/modified bowls	27,000 ea.
4	6′x6′ "Special" D.D. sheepsfoot tampers, U.S.B.R. specs.	7,500 ea.
1	6′x 16′ Koehring smooth faced sealing roller, 50,000#	3,500
2	Mod. 12 Cat motor patrols, cabs & hyd. shift mold boards	8,000 ea.
2	Mod. 200 Rex double Pumpcretes, electric	7,500 ea.
2	60″x20′ Link-Belt H.D. mang. apron feeders w/drives	12,500 ea.
2	30″x 60″ single roll Gruendler crushers w/drives	9,500 ea.
1	6′x 12′ Tyler F800 single deck screen w/drive	6,000
	Approx. 2 miles 42″ and 48″ channel frame conveyor systems in flights of 150′ to 1885′	Price on application

CALL, WIRE or WRITE for Complete Bulletin!

TRINITY DAM CONTRACTORS

10 West Orange Ave. — **South San Francisco, Calif.**

Phone: PLaza 6-0300, Ext. 279

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

MISCELLANEOUS

1—Buda Westinghouse diesel electric set 220 volt, 3 phase, 60 cycle, 187.5 KVA complete new control panel, voltmeter, ammeter, frequency indicator and manual voltage control. Skid mounted, complete, ready to go.
1—Electric machinery package generator 30KW, 480 volt, 3 phase, 60 cycle, 1200 rpm. Use your power. A bargain.
1—Electric motor driven generator set. G-E 225-hp, 220 volt, 60 cycle, 3 phase, 514 rpm motor. Borke type WB-60, 120-440 volt DC, 150 KW, 625 amp. Direct connected generator. A bargain.
1—Single-drum electric hoist, gear driven with cone clutch and friction brake. G-E 3-hp, 220/440 volt motor.
1—CMC 16S mixer, 16-cu. ft. capacity, Hercules 1 x B6 engine. Pump, meter, Uni-Batch tow batcher and Winslow scale.
1—Gar-Bro model 1000 Power Cart with 14-cu. ft. concrete body. A good buy.

THE COLORADO BUILDERS' SUPPLY CO.
1534 Blake Street — Denver 2, Colo.

1—Northwest shovel model 70, serial number 4109 with 2½-yd. bucket, Cummins diesel engine, also spare parts.

2—10" Allis-Chalmers Superior reduction crushers.

1—Traylor model TZ gyratory crusher.

3—Ingersoll-Rand FM-3 wagon drills.

NEW YORK TRAP ROCK CORP.
162 Old Mill Road
West Nyack, N. Y.

BACKHOE & CRANE

1—Link-Belt model LS-80 crane with 50' boom, Rudomatic tagline, Buda gas engine, s/n 7074.
1—Link-Belt model LS-60, Buda gas engine, s/n 8128.
1—Bucyrus-Erie 10-B crawler-mounted backhoe, s/n 20429, powered by Buda model 326-hp. 6 cylinder gasoline engine, s/n 11579. Backhoe with 14' boom, 4'6" stick, 29" wide bucket at side cutters with 3 teeth mounted on 9' long x 7'8" wide crawlers with 14" pads.

DRAGLINE

1—Bucyrus-Erie 22-B ¾-yd. heavy-duty dragline and clamshell with 45-ft. boom, Rudomatic tagline, rotating fairleads, long wide Cats (12-ft. 9-in. long, 10-ft. 6-in. wide, 30-in. tread). General Motors diesel power, machine s/n 114843. Perfect condition.

BUCKETS

1—Erie ⅝-yd. rehandling bucket, s/n 10192P01. Good condition.
1—Owen type M size 126, ½-yd. general purpose digging bucket with teeth and counterweights, s/n 22355. Good condition.

MISCELLANEOUS

1—LeRoi 315 air compressor on 4 pneumatic tires, 7 or 8 years old.
1—Wayne 36" rider industrial vacuum pick-up sweeper, demonstrator.
1—CMC Jetcrete with all accessories. Excellent condition, practically new with all extra accessories.
1—Used Kennedy-VanSaun revolving scrubber screen, 48" dia. x 21' long, in excellent shape and complete with all new parts including extra scrubber sections and new sizing screens.
1—Clark 10,000-lb. fork lift, solid tires.

S. M. CHRISTHILF & SON, INC.
Timonium Rd. & Harrisburg Expressway
Timonium, Md.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

BUCYRUS-ERIE 38-B

Heavy-duty lifting crane, powered by Caterpillar D326F diesel engine with torque converter. 110' boom, mast pendant suspension, 12-part tackle, 30' jib, boom stops. This machine is nine months old and can be bought for approximately 70% of the new price.

D. D. KENNEDY, INC.
P. O. Box 177
Bellwood, Ill.
Chicago: AUstin 7-4300
Suburban: LInden 4-3600

DRAGLINES

L-50 Lorain 1-yd., Cat D318, long crawlers, 50' boom. Serial 23596. Excellent.
TL-25 Lorain ¾-yd., Hercules gas, 12' crawlers, 40' boom. Less than 10 hours on the meter. This is a surplus machine and an excellent buy.
15-B Bucyrus-Erie ½-yd., standard crawlers, 35' boom. Serial 49464. Fair.
K Insley ½-yd., gas engine, long wide crawlers. Serial 3879. Completely rebuilt.

GRADERS

Cat 12 S/N 9K5009, electric start., all four rear tires recapped.
Galion 118 S/N MD17985 IHC UD-16A diesel, power steering, operators cab.

ATTACHMENTS

51-B Bucyrus-Erie Shovel Front with 2-yd. dipper. No deck machinery. Unused.
22-B Bucyrus-Erie hoe (straight boom). Used.
15-B Bucyrus-Erie center section 15' long. Unused.
Lima 34 swing-type fairlead. Unused.
15-B swing-type fairlead. Unused.

POWER SHOVEL CO.
4913 Massachusetts Ave.
Indianapolis 18, Ind.

Bucyrus-Erie 71-B shovel, GMC 6-110 engine, 3 cy. Amsco bucket s/n 116168, located at Williams, Ariz. $70,000
Bucyrus-Erie 54-B shovel/crane, Buda 6DC 1879 engine, s/n 60319, located at Aurora, Colo. $28,000
Bucyrus-Erie 54-B shovel/crane, Buda 8DA 1125 engine, s/n 111968, located at Aurora, Colo. $33,000
Bucyrus-Erie 54-B dragline, Buda 6DC 1879, s/n 24654, located at Leesburg, Ala. $22,500
Manitowoc 4500 crane, 140' boom, Cat D397 engine, straight 48" clutch, s/n 4589, located at Leesburg, Ala. $135,000
Northwest model 6 shovel/dragline, model ME-6 engine, s/n 6827, located at Gallup, N. M. $17,000
Manitowoc 4500 shovel attachment, located at Boise, Idaho $30,000

INTERMOUNTAIN EQUIPMENT CO.
P. O. Box 1129 — Boise, Idaho
Phone: 3-6441

DRAGLINES

38-B Bucyrus-Erie, 1½-yd., Cat D13000 diesel engine, long cats, 33" treads, 1953, 50' boom, dragline fairlead, very good condition.
30-B Bucyrus Erie, 1¼-yd., Cat D318 Diesel engine, long cats, 36" treads, 1959 rental and demo machine, 60' boom, fairlead, like new, discounted.
22-B Bucyrus-Erie, ¾-yd., G.M.C. 3-71 diesel engine, 12' long crawlers, 26" treads, 1948, crawlers rebuilt, fairlead, good condition.
22-B Bucyrus-Erie, ¾-yd., Cat D318 diesel engine, long cats, 30" treads, 50' boom, fairlead, 1955, low hours, excellent condition.
22-B Bucyrus-Erie, ¾-yd., Buda K-428 gas engine, 12' long crawlers, 26" treads, 50' boom, 1955, dragline fairlead, overhauled, excellent.
15-B Bucyrus-Erie, ½-yd., Buda gas engine, 40' boom, fairlead, sound condition and will recondition further to suit buyer.
34 Lima, ¾-yd., Buda K-525 gas engine, 40' boom, dragline fairlead, repaired and in good working condition, priced to sell.
45 Bay City, ¾-yd., Cat D4600 diesel engine, dragline fairlead, 45' boom, long crawlers, 26" treads, good working condition.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

SHOVELS

22-B Bucyrus-Erie, ¾-yd., G.M.C. 3-71 diesel engine, 1948, 26" crawler treads, crawlers rebuilt, machine in good operating condition.
29-B Bucyrus-Erie, 1-yd., Cat diesel engine, machine in very good condition, 1-yd. shovel dipper, $2,000 in extra parts included, priced to sell.
15-B Bucyrus-Erie, ½-yd., Buda gas engine, equipped with an unused shovel attachment and ½-yd. dipper, very good but will further repair to suit.
34 Lima, ¾-yd., Cat D318 diesel engine, machinery overhauled and in excellent condition, cab panels sandblasted and repainted.
375 American, ¾-yd. shovel, Waukesha gas engine, needs some work but would make a standby or extra shovel for limited loading. Cheap.
K-12 Insley, ½-yd. Buda gas engine, lots of work left in this one at a giveaway price, buy as is or we will repair to suit purchaser.
30-B Bucyrus-Erie, 1-yd., Cat. D-318 diesel engine, 1959, rental and demonstration machine in like new condition, discounted for rental use.

BACKHOES

38-B Bucyrus-Erie, 1½-yd., Cat D13000 diesel engine, 1953, long cats, 33" crawler treads, 1½-yd., hoe dipper, overhauled in November, excellent.
30-B Bucyrus-Erie, 1 to 1½-yd. dippers available, Cat D318 or G.M.C. 4-71 diesel engines, rental and demonstration machines, excellent, discounted.
22-B Bucyrus-Erie ¾-yd., Cat D318 diesel engine, 1955, long crawler frames with 30" treads, excellent condition, low hours, priced right.
34 Lima, ¾-yd., Buda gas engine, K-525, 1949, cambered hoe boom, ¾-yd., dipper, machinery overhauled, very good condition.
K-12 Insley, ½-yd., Buda gas engine, needs some work but has been producing right up to trade in time. Bargain.

LIFTING CRANES

1500 Manitowoc, 1 yd., gas engine, 80' boom, long crawlers, an older machine but a sound piece of machinery at a good price.
30-B Bucyrus-Erie, Cat D318 diesel engine, long crawler frames with 36" treads, pendant suspended boom available up to 100', demonstration and rental machine at a big reduction.
30-B Bucyrus-Erie Maxi-mounted wagon crane, 35-ton capacity, 55' boom, G.M.C. 4-71 diesel engine, independent propel, dragline fairlead, tagline reel, hydraulic tow bar, 14.00 x 24 tires, 1,500 hours, an excellent machine at a big reduction in price.
357 Unit wagon crane, 7-ton capacity, Chrysler gas engine, machinery overhauled, cab panels sandblasted and repainted, excellent condition.
14-B Bucyrus-Erie truck crane, 6-wheel drive carrier, 60' of hydraulic telescoping boom, outriggers with screw jacks and floats, a like new machine with a demonstrator discount.
"L" Quickway truck crane, 10-ton capacity, 80' of boom and jib, heavy-duty 15-ton carrier, gas power in crane, front and rear outriggers, very good condition and priced to sell.

HYDROCRANE EXCAVATORS

H-2 2 ton capacity, mounted on I.H.C. truck chassis, rear hydraulic outriggers, telescoping boom, priced to sell at $2,000.
H-3 5-ton capacity, 1952, mounted on Ford truck chassis, operator's cab, tandem outriggers, telescoping boom, hydraulics overhauled.
H-3 5-ton capacity, self powered with a new Continental gas engine, new pumps, overhauled hydraulics, mounted on G.M.C. 1951 upper on 1953 truck, operator's cab, tandem outriggers.
H-3 5-ton capacity, self-powered with 4-cylinder Ford engine, hydraulics overhauled, operator's cab, tandem outriggers, tagline reel, clamshell bucket, hoe attachment available.
H-3 5-ton capacity, telescoping boom, tandem outriggers, hydraulics overhauled, mounted on 6-wheel drive carrier, tagline reel and bucket.

See us for rental cranes and shovels. Bucyrus-Erie dragline buckets. Used booms and Buckets.

J. P. WAITE, INC.
3301 W. Pierce St. — EV 4-1900
Milwaukee 15, Wis.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

51-B HOE and DRAG Comb.

Bucyrus-Erie 51-B combination with backhoe and dragline fronts. 70' boom. 3 yard Page bucket. Cat power with torque converter. Long, wide crawlers. 1957 machine and in A-1 condition.

POWER SHOVEL CO., INC.
4913 Massachusetts Ave.
Indianapolis 18, Ind.

Bucyrus-Erie model 51-B heavy-duty long and wide undercarriage. Powered by Buda diesel engine. 100' boom, 20' jib, fairleads and tagline. Light plant with extra lights. Excellent condition, from our rental fleet, low hours. #3215, $54,300 FOB, Louisville, Ky.

Bucyrus-Erie model 15-B, ½-yd. dragline, with 40' boom and powered by International UD-9 diesel engine. Undercarriage completely rebuilt, #4042. $7,500 FOB, Louisville, Ky.

Bucyrus-Erie model 15-B, ½-yd. backhoe. Powered by International UD-9 diesel engine, #9021. $5,500 FOB, Louisville, Ky.

Bucyrus-Erie model 22-B heavy duty dragline, clamshell, 60' boom pendant suspension lifting crane, long and wide tracks, extra counterweights, 38" treads, powered by IHC UD-525 diesel engine. Replacement cost $34,499.60. #3280. $22,000 FOB, Louisville, Ky.

Bucyrus-Erie model 30-B heavy duty crane, clamshell, dragline with long and wide undercarriage, 60' boom, pendant suspended. Powered by International UD-525 diesel engine. Out of our rental fleet. $37,500 FOB, Louisville, Ky.

Northwest model 80-D, 2-yd. shovel. Diesel engine. Excellent condition. $45,500. FOB northern Indiana.

Lima model 802 with 100' boom, 15' jib. Powered by Cat D17000 power unit. $25,500.

Bucyrus-Erie model 38-B, 1½-yd. dragline with long and wide track, 11'6" wide, 7'5" long, 33" pads, 70' boom, pendant suspension, unit 79 extra counterweights. Powered by IHC model UD-1091 diesel engine, total weight 109,360#. Replacement cost $60,915. Like new condition, rental service is all this dragline has been used. $45,000 FOB, Elizabethtown, Ky.

Lorain model L-41, ¾-yd. capacity, 45' boom with fairleads, 33" pads. Diesel D318 Caterpillar engine. 1956 model. Also includes ¾-yd. shovel front with Amsco bucket H&L teeth. $5,500 FOB, Louisville, Ky.

P&H model 255-A, ¾-yd. shovel, crawler mounted. Powered by Caterpillar model 315 diesel engine. #5918. Excellent condition. $8,500 FOB, Elizabethtown, Ky.

Schield Bantam crane mounted on 6x4 carrier, ⅜-yd. capacity, gasoline engine, 40' boom with fairleads, out-riggers. Includes ⅜-yd. dragline bucket and ⅜-yd. clamshell bucket. Excellent condition. $12,500 FOB, Louisville, Ky.

Unit model 1020, ¾-yd. shovel, powered by GMC 3-71 diesel engine. #1207. $7,500 FOB, Middelsboro, Ky.

Unit model 514, ½-yd. shovel with Chrysler gasoline engine. #10920. $2,500 FOB, Paducah, Ky.

Lorain model L-820, 1¾-yd. shovel, crawler mounted. Powered by Caterpillar model D13000 diesel engine. Shovel in operating condition. #4007. $7,500 FOB, Elizabethtown, Ky.

General model 307, ¾-yd. dragline with 40' boom. Powered by GMC 3-71 diesel engine. #4040. $6,700 FOB, Evansville, Ind.

Koehring ¾-cu. yd. shovel front #397. $750 FOB, Elizabethtown, Ky.

Lorain model 820, #905. $1,200 FOB, Elizabethtown, Ky.

Quick-Way model E, ¾-yd. shovel front. #501. $150 FOB, Elizabethtown, Ky.

BRANDEIS MACHINERY & SUPPLY CORP.
Write—Wire or Phone

Jim Waddell	**R. Lockwood**
P. O. Box 1705	**P. O. Box 27**
Louisville, Ky.	**Evansville, Ind.**
MElrose 7-4741	**HArrison 3-4491**

Bucyrus-Erie model 10-B dragline, serial No. 88595 with Buda gasoline engine, 28' boom. Machine completely rebuilt $5,250

Bucyrus-Erie model 15-B, serial No. 33505, with AC model HB351 gasoline engine, ½-cubic yard backhoe, 16" treads, standard crawlers. Currently being rebuilt in our shop.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Bucyrus-Erie model H-5 Hydrocrane, serial No. 119382, complete with tagline reel, ½-cubic yard GP clamshell bucket, mounted on ten-wheel International truck chassis. Entire unit sold new in 1959. Very low hours. Like new condition throughout.

Bucyrus-Erie model 15-B Transit Crane, serial No. 117102. Factory truck carrier with White CC160 gasoline engine, 10.00 x 20 tires. Upper works powered by Caterpillar D315 diesel engine. Cambered boom backhoe and clamshell crane equipment available. Currently being rebuilt in our shop.

Bucyrus-Erie model 22-B, serial No. 116958, with Caterpillar D315 diesel engine, ¾-yd. cambered boom backhoe, 26" treads with 12'-0-⅜" crawlers. Currently being rebuilt in our shop.

Bucyrus-Erie model 22-B, serial No. 105975, with Caterpillar D318 diesel engine, 26" treads with 12'-0-⅜" crawlers. Any or all attachments available. Machine currently being rebuilt in our shop.

Bucyrus-Erie model 51-B 2½-yd. shovel, serial No. 62581, with Caterpillar D17000 diesel engine, standard crawlers with 36" treads. Low hours. Reconditioned and in very good condition throughout.

Lorain Model TL-25 ¾-yd. cambered boom backhoe with 3-71 General Motors diesel engine, extended crawlers, wide treads. Machine delivered new in 1956. Undercarriage rebuilt this year. Good working condition throughout. As inspected. $10,500

P&H model 255, serial No. 10784 ⅜ cubic yard shovel with eight cylinder Chrysler engine. Appearance excellent. Good working condition throughout. Location—Watertown, Conn. "As is" $4,000

⅜ cubic yard cambered boom backhoe attachment also available. Price $2,000

Koehring model 304, serial No. 8624 ⅜ cubic yard backhoe with International UD14 diesel engine. Good working condition. "As is" $5,000

Bay City model 65, serial No. 4058, combination 1¼ cubic yard shovel and 1¼ cubic yard backhoe with Cummins diesel engine. $7,000 spent in repairs within past year. Good working condition throughout. As inspected $10,500

Northwest model 6, Serial No. 13260, with Murphy diesel engine, extended crawlers, independent power boom hoist, 1½-yd. cambered boom backhoe attachment, 45-ft. crane boom, pendant suspension with high gantry. Appearance excellent. Currently being rebuilt in our shop.

Bucyrus-Erie Hydrohoe Attachment for H-3 Hydrocrane with 18" general purpose dipper, 20" utility dipper, 12" narrow dipper and all neecssary fittings. Excellent condition $750

Bucyrus-Erie model 15-B shovel front complete with dipper trip, chains and lagging $1,200

Bucyrus-Erie model 22-B shovel front complete with dipper trip, chains and lagging. Good condition $1,500

Lorain ¾-yd. shovel front, Amsco bucket complete with dipper trip. Excellent condition throughout $1,500

Bay City model 45 ¾-yd. shovel front complete with dipper trip. Good condition. $1,500

BINDER MACHINERY CO.
Brighton St., Union, N. J.
MUrdock 8-0060

SHOVELS & CRANES

Lorain 820, 2-yd. clamshell, 65' boom, pendant suspension, tag line, 34" tracks, 15' 6" long under carriage. Cat D13000 engine completely rebuilt and guaranteed. $35,000

Bucyrus-Erie 22-B ¾-yd. backhoe, S/N 119702. Cat D315 engine. Very good condition. $27,300

Bucyrus-Erie 22-B clamshell S/N 69159, 35' boom, tag line, Buda gas engine. Recond. $15,000

Bucyrus-Erie 15-B, ½-yd. backhoe, S/N 27473, Buda gas engine. Operating Cond. $5,500

Northwest #25 truck crane, S/N 12454, 70' boom, telescoping boom stop, out riggers and floats, Dart carrier. Good op. cond. $18,350

SHOVEL ATTACHMENTS

Bucyrus-Erie shovel attachment for 38-B, complete with deck machinery and Esco 1¾-yd. dipper. Good cond. $5,000

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Bucyrus-Erie tunnel shovel attachment for 38-B. Includes 15' boom, 12' handle, 1½-yd. dipper. Very good. $4,500

Lorain shovel attachment for model 820 complete with deck machinery and 2-yd. dipper. Good cond. $2,750

Bucyrus-Erie shovel attachment for 15-B, complete with ½-yd. dipper. Like new. $1,000

Fairlead attachment for Northwest #25. Good. $520

Haiss ¾-yd. clamshell bucket with teeth. $1,000

Pettibone Mulliken 2-yd. dragline bucket, complete with chains and bridle. Good. $2,200

LOADERS

Caterpillar #6 Traxcavator with 2-yd. bucket and teeth, oil clutch, semi cab, recond. $11,500

Allis Chalmers HD5G tractor loader, 1-yd. bucket. Good operating cond. $4,000

H. O. PENN MACHINERY CO., INC.
140th St. & East River
New York 54, N. Y.

MISCELLANEOUS EQUIPMENT

TWO GANTRY CRANES

302'
Electrically powered, 440 volt
Transverse, horizontal and vertical travel
6-ton hook load capacity at 302' span; capacity can be increased for 25 ton hook load by shortening span with few modifications.
Storage hopper capacity 21 cu. yds. Single hopper arrangement.
Full load operating capacity 65 cu. yds. per hour.
Travel rails not included.
Total weight each: ..... 150 tons
Estimated dismantling cost: $15,000
Age: ..... 2 years
Price: ..... $100,000 each
Location—Chicago, Ill. Inspection at any time. Availability—immediate.

D. D. KENNEDY, INC.
P.O. Box 177 **Bellwood, Ill.**
AUstin 7-4300 **LInden 4-5600**

BIT FURNACE

Sunbeam—gas fired—three 9" dia. x 13" deep chambers—complete with motor, blower, controls and feed rack with carriages for each opening—new 1956 used very little—excellent condition, cheap—located Evansville, Ind.

BUCYRUS-ERIE CO.
South Milwaukee, Wis.
J. E. Smart **SO 2-0900**

CONTRACTORS WANTED

Contractors Wanted

For Costa Rica. Bulldozers, hauling equipment with operators. Long term contract.

International Iron, Inc.
527 Texas National Bank Building
Houston, Tex. **CA 7-6251**

WANTED TO BUY

URGENTLY REQUIRED

Used engine in good serviceable condition suitable to power a Bucyrus-Erie 200-W dragline. Engine should be a Cooper Bessemer FW6 or equal. Write Box No. 3761.

EXCAVATING ENGINEER
South Milwaukee, Wis.

"I LIKE THE WAY WILLIAMS BUCKETS HANDLE"

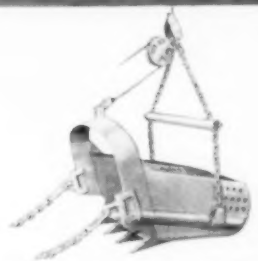
says CLYDE QUIGGLE, CLEVELAND CLAMSHELL OPERATOR

Henry Miesz Excavating Company of Cleveland, Ohio, for whom Clyde works, likes them even better.

"Williams Buckets are efficient and tough. They need minimum maintenance. We get our trucks filled with fewer grabs, thus keeping them rolling steadily. All this adds up to better profits for us", reports William Miesz, vice president.

Every Williams Bucket is of rugged construction, welded throughout using quality alloy steels. Williams has a complete line of clamshell and dragline buckets for every application.

Write us for name and address of your nearest Williams dealer or send for our Contractors bucket catalog.



WILLIAMS BUCKET DIVISION

THE WELLMAN ENGINEERING COMPANY
113 ST. CLAIR AVE., N. E., CLEVELAND 14, OHIO

CLAMSHELL AND DRAGLINE BUCKETS • ROCK GRABS • WOOD GRABS • SPECIALLY DESIGNED BUCKETS OF ALL TYPES.

How Bucyrus-Erie assures drum stability, trouble-free performance in 38-B shovel

ENGINEERING SERVICE THAT SAVES you time and money. Often our graduate engineer salesmen can solve your bearing problems on the spot. Working with you at the design stage, they can help you select the one Timken bearing—from the thousands available—that will do the best, most economical job for you. Our engineering experience plus the finest research and development facilities in the industry assure you greatest bearing value.

To keep its 38-B Shovel working steadily and trouble-free, Bucyrus-Erie engineers had to assure drum stability under toughest digging conditions to provide enduring alignment, trouble-free performance. To obtain this stability, the engineers mount the hoist and crowd drums on Timken® tapered roller bearings. They also use Timken bearings for the vertical transmission shaft and PTO.

Timken bearings assure stability because their tapered design enables them to take radial and thrust loads in *any* combination. Parts are held in rigid alignment, last longer and require less maintenance, too. What's more, they take the shock.

An extra advantage: Timken bearings permit use of tight fits on both bearing cones and cups because the running clearance is set during assembly. It's important when the bearing races are rotating members as in this application.

Industry rolls on

TIMKEN®

tapered roller bearings

The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO". Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits. Canadian Division: Canadian Timken, St. Thomas, Ontario.